The Canadian
Medical Association Journal

Vol. XXIII TORONTO, NOVEMBER, 1930 No. 5

A Clinical Address

ON

THE PRIMARY TUMOUR IN BREAST CARCINOMA*

BY SIR LENTHAL CHEATLE, K.C.B., F.R.C.S.,

Surgeon to King's College Hospital

London

DEFINITION of an epithelial tumour.—The process of epithelial tumour becomes morphologically obvious when one epithelial cell has divided into two cells, provided the daughter cell is not a desquamated dead cell, but one capable of maintaining its existence and of dividing. Hence the early state of a tumour is not one that can be discovered by palpation. This process occurring in the breast involves only its ducts and acini, and in the case of carcinoma constitutes the primary tumour. The structure, nature, and characteristics of this primary tumour should form the basis of any attempt to grade carcinoma of the breast in classes of malignancy.

It is common to describe collectively the carcinomata that can be felt in the breast as "the primary tumour"; all epithelial cells that have reached lymphatic glands and tissues elsewhere are generally called "secondary deposits." In describing primary tumours in carcinoma of the breast, it is essential to realize that all epithelial cells become secondary deposits directly they trespass into tissues where they have no normal right to be. Hence the tumour that is usually described in the breast as the primary tumour truly consists of two parts: (1) the primary tumour in the ducts and acini; (2) secondary deposits in the connective tissue of the breast.

This lecture is to be devoted entirely to describing the nature, varieties, and extent of primary carcinomatous tumours of the breast. I do not intend to attempt to grade breast carcinoma. The task seems to me to be impracticable for the following reasons. First, if the disease is at all advanced, it is often impossible to detect the site of the primary growth. It becomes lost in the chaos of growth and secondary cellular invasion. In this instance the grading would of necessity be based on the morphological appearances of the secondary deposits. This basis is too full of error to be of practical use. The malignancy of a secondary deposit often depends upon the environment in which it is deposited. For example, I have known secondary deposits in the liver grow furiously, while those in the supraclavicular fossa have remained completely latent. Secondly, probably the commonest site of primary tumour is the terminal ducts and acini. Its characteristic structure in the terminal ducts may be different from that in the corresponding acini. It is almost impossible—even in the earliest examples of breast carcinoma—to detect the actual site of invasion, which might be in the duct or in the acini or in both structures. Once cells have invaded they lose their shape; a columnar cell may assume any shape. Dr. Max Cutler and I have come to the conclusion that a practical attempt to grade the malignancy from the morphologcial appearance of a primary tumour of a breast carcinoma can be made only when the neoplasia in the ducts and acini is of the same characteristic structure—or rather want of structure—and is highly anaplastic.

*Prepared for the annual meeting of the British Medical Association, Winnipeg, August, 1930, but not delivered owing to the regrettable illness of the author.

XUM

The sites of origin.—The nipple is covered by mucous membrane opening on to the surface of which are about ten to fifteen duct orifices and the ducts of sebaceous glands. The number of sebaceous glands is extremely variable in different nipples. The mucous membrane of the nipple may be the site of a congenital mole. Carcinoma can occur in the structures I have named. It is seldom that carcinoma arises in moles and sebaceous glands. I have one specimen in which it can be seen arising from the sebaceous glands. There is also Paget's disease of the nipple. I will describe the importance of this disease later.

In the rest of the breast, carcinoma may occur either in a duct only or in the terminal ducts and acini. I have seen many early carcinomata arising in terminal ducts and acini, but I have never yet detected a primary growth situated only in acini. The terminal ducts into which they lead have always, without exception, shared in the production of the primary tumour. I must say here, that even in the nipple this type of carcinoma can occur, although usually there are no acini in the nipple. During pregnancy and lactation the nipple is enlarged by the formation of new acini to an enormous extent. Although these acini usually vanish after lactation, some of them may remain and, in some instances, share in giving rise to a terminal duct and acinous primary growth. I have two examples.

Extent of the primary growth.—The area affected admits of wide variations. In duct-primary-tumours the actual area occupied by the epithelial neoplasia is usually limited to one part where it may reach clinically recognizable proportions before marked epithelial cellular invasion occurs. Sometimes when this state of things is occurring in the main branch, two or more papillomatous new growths of malignant appearance may be present in some of the peripheral branches of the same duct. These additional tumours do not always show signs of epithelial cellular invasion. The presence of the carcinoma in the main duct appears to be inhibiting the process of invasion elsewhere. The same appearances are seen in the papillomatous adenomata of the colon, as pointed out by Dr. Cuthbert Dukes. Multiple papillomata in the ducts of the breast and in the colon behave therefore very much in the same way, suggesting that the processes are similar in type.

In the internal ducts and acini there are marked variations in the extent of the epithelial surface occupied by the epithelial neoplasia of the primary growth. For example, in the small localized lumps of carcinoma that can be felt in the margin of breasts of healthy people, the surface epithelium occupied by the epithelial neoplasia of the primary tumour is limited to two or more terminal ducts and their acini, In other instances, a number of terminal ducts and their acini are affected, and carcinoma surrounds each unit. In rare examples, the main part of one duct, all its branches and acini are full and distended by the primary epithelial neoplasia. In other and still rarer examples, two neighbouring ducts and all their branches and acini, are distended by the primary epithelial neoplasia occurring in them. In these rare instances, the chief proportion of the palpable lump may be composed of the primary tumour formation within the ducts and acini. When I come to speak of the regression of primary tumours, I shall allude to primary epithelial neoplasia that has occurred in nearly all the terminal ducts and acini of the breast. These structures are filled by epithelial neoplasia and are not in a state of desquamation.

The variety of types of structure of the primary tumour in ducts and acini may be astonishing, and different varieties may exist in the same lesion. Some of the growth in the ducts may be papillomatous, and some may contain epithelial neoplasia without any connective-tissue elements, the epithelial cells having usually lost all columnar shape, being round or feathery. In some parts only of an extensive primary epithelial neoplasia the epithelial cells may be highly anaplastic in character. This fact would explain the regression of only parts of a breast carcinoma upon external radiation. In examples of this kind, the anaplastic portions of the neoplasia regress upon a given dose of external radiation which has little or no effect upon parts which are less anaplastic.

Variation of structure.—In the ducts.—Papillomatous formations are common, but the epithelial neoplasia is not always papillomatous, and sometimes the epithelial neoplasia contains no connective-tissue element.

In the terminal ducts and acini.—The primary tumour in this situation may consist of papillomatous formation in the duct and non-papillomatous epithelial neoplasia in the acini; or there may be no papillomatous formation in the ducts, and they, together with the acini, may be filled and distended by an epithelial neoplasia

that contains no element of connective tissue whatever.

Nature of the primary tumour.—The morphological appearances of the cells in the primary tumour, wherever it may be, depend upon their biological states. Some parts may appear morphologically highly anaplastic, other parts less so. As I said before, this fact again may explain partial regression of breast tumour upon external radiation. When highly malignant they lose their shapes, and become round or hexagonal. All polarity and arrangement is lost. Irregular and regular mitoses can be seen. For this reason it is impossible to disallow the origin of neoplastic cells from duct epithelium only because they have lost their columnar shape.

Degeneration of the primary tumour.—Occasionally the type that is generalized in the primary tumour may show signs of regression over the whole tract of its distribution. On the other hand, I have a specimen in which regression of this generalized type has occurred everywhere except at one place. The epithelial cells in this part of the primary tumour are vigorous, and have invaded outside tissues and a lymphatic gland in the axilla. The carcinomatous area derived from a primary tumour under these conditions may be easily missed, unless whole microscopic sections of the gland have been cut and carefully examined. Smaller tracts of primary tumour formation may exhibit the same degrees of regression and vitality respectively. In all instances, the epithelial cells show no particular form of degeneration, but seem to be losing their vitality.

In some instances, the epithelial cells of the primary tumour undergo the peculiar gelatinous, mucoid, or colloid degeneration that attacks carcinoma cells chiefly. This fact was recently pointed out by Dr. Max Cutler and myself.

RELATION OF CARCINOMA TO OTHER EPITHELIAL CHANGES

Can carcinoma be definitely traced to other morphological and pathological changes in the epithelium of the affected mamma? Under this heading I will discuss three states: "mazoplasia," Schimmelbusch's disease, and Paget's disease of the nipple.

Relation of the primary tumour to "mazoplasia".—"Mazoplasia" is a term I have given to the condition in which nearly all terminal ducts and acini are surrounded respectively by a hyperplasia of the pericanalicular and periacinous connective tissue among which lymphocytes or macrophages may be seen. New acini may also be present. The epithelium in these structures may be in a state of desquamative epithelial hyperplasia, resulting in the throwing off of small, withered cells which may distend the ducts and acini. This condition is seen in male and female breasts at birth, and in females at puberty and during pregnancy and lactation. When this condition alone is present at other times than those I have mentioned, I take it to be an indication that the breast is more active than it should be, instead of being completely at rest. The condition is almost a physiological one, and is so commonly and universally present, especially in married women who have borne children, that I am completely unable to associate it with any pathological state, with one exception, namely, the formation of a certain type of fibroadenoma. I do not believe it ends in cyst formation, and I cannot connect it with the process of carcinoma —at least no more than the oxygen women breathe can be connected with the diseases of cysts or carcinoma.

I have suggested the term "mazoplasia" in an attempt to eradicate the term "chronic mastitis."

Relation to Schimmelbusch's disease.—Schimmelbusch's disease is quite a different proposition, and forms a remarkable, distinctive, and specific sequence of events. It is a disease *sui generis*. At least 20 per cent of all carcinomata of the breast arise as the terminal event of this pathological process. It occupies three decades of life, beginning first in the late twenties and early thirties as desquamating epithelial hyperplasia of specific type in the terminal ducts and acini. The common cysts of the breast are the result of this stage. The process may end here, and result merely in the formation of cysts. In the late thirties and early forties the desquamative stage may pass into one of epithelial neoplasia. At this decade it is usually confined within the normal boundaries of ducts and acini. In the ducts, multiple papillomata are common; in the acini the epithelial neoplasia usually contains no fibrous tissue element. Occasionally it does contain fine strands of connective tissue, covered and almost hidden by many layers of neoplastic epithelial cells. At the end of this stage the epithelium may even look malignant, and it may be difficult to be sure whether epithelial cells in certain parts are strictly contained within their normal boundaries. The process may stop or remain in this benign state for several years,

XUM

giving rise to the condition of papillomata in the breast. In the late forties and early fifties it may become carcinoma, and certainly does so in at least 20 per cent of all carcinomata of the breast. Mr. Wale and I have discovered Schimmelbusch's disease occurring in the prostate gland[1]. Schimmelbusch's disease in the mamma and in the prostate runs through the same pathological changes and the same sequence of events as the experimental tar carcinoma process of mice.

These facts make me wonder whether all carcinomata of the breast and prostate also run through the same changes, but in most instances more rapidly than in others, the sequence of events being more apt to be missed upon morphological examination when the disease runs a rapid course. Time does not allow the discussion of many important and suggestive points; however, I have discussed the matter elsewhere[2].

Relation to Paget's disease of the nipple.—The common and definite association between this disease and carcinoma of the breast makes it remarkable in more ways than one. I will allude only to two. The first point of importance—as it appears to me—far transcends all others and is etiological in character. Whatever be the condition termed Paget's disease of the nipple there is no doubt that separate foci of carcinoma originate in the epithelium of ducts or duct and acini of the underlying breast. These foci cannot be transplantations, nor are they due to a spread of the disease from one place to another. They are distinct and separate lesions of carcinoma arising in the glandular epithelium of the breast. A logical conception based on this association is that the same agent or agents which induce Paget's disease also may induce carcinoma of the breast. The association of the two diseases is the strongest reason I know for suggesting that a "virus" may be the inducing agent of carcinoma.

The second reason that makes this disease remarkable is a morphological one. The common association of breast carcinoma with Paget's disease of the nipple gives those who are searching for primary carcinomatous tumours an important field for discovery in the breast underlying this disease. The best means of examining in detail all these breasts is to cut microscopic sections of the whole glands. I have examined seventeen of these cases in this way, and I have discovered primary tumours in all of them at various stages of growth and malignancy.

The sites of origin of the primary tumour, the extent of surface it occupies, its variation in structure and nature, are all the same as if the breast were not affected by Paget's disease of the nipple. I need not repeat the description. There is only one curious fact that I have noticed, namely, that Paget's disease is never associated with a papillomatous carcinoma in the duct openings. When carcinoma of the duct openings is associated with Paget's disease of the nipple, the carcinoma consists of masses of epithelial cells which contain no signs of connective tissue element.

The interest in Paget's disease has received fresh impetus from the observations upon the subject of Professor Robert Muir[3], who agrees with Jacobaeus[4], and Ribbert[5], and more recently other authors, who claimed that Paget's disease of the nipple was merely a spread of a carcinoma originating in the upper ducts of the breast into the epidermis of the nipple and skin. Professor Muir has done a great deal more than agree with these authorities; he points out that carcinoma may spread over extensive areas in and among normal epithelial surfaces without transgressing the normal boundaries of these surfaces. He tells us that when a carcinoma invades an epithelial surface, its cells can spread diffusely in that surface. Professor Shaw Dunn[6] supports this observation by a beautiful example, which, he maintains, shows the mucigenous cells of a rectal carcinoma spreading in this manner in the cutaneous epidermis of the anus while still within the normal boundaries of that surface.

Professor Muir goes still further, and states that the cells of a carcinoma originating in the squamous epithelium can also spread in the epidermis surrounding it without transgression of normal boundaries. All who have been privileged to see Professor Muir's specimens, and hear his description of them, realize that a fresh conception has been reached of the way in which carcinoma cells may wander. Once that knowledge has been mastered there appears to be no limit to the area of epithelial surfaces that may thus be invaded. For example, the epithelial cells of a carcinoma originating in an upper duct of the breast may, under these circumstances, creep among the epithelial cells in the mucous membrane of the nipple and dip down in that membrane till the glandular epithelium has been reached, spreading in the epithelial surface of fresh ducts, and rendering them carcinomatous too. In fact two or three duct openings may be

thus invaded. This method of spread would account for the fact that two or more upper ducts are sometimes seen to be carcinomatous in Paget's disease of the nipple. If all carcinomata originating in the underlying breast in Paget's disease of the nipple could be explained in this way, many of my convictions with regard to this disease would be shattered. Fortunately for some of them—and I regard them as being the most important—Professor Muir agrees with me that carcinoma in a breast underlying Paget's disease of the nipple can arise in the epithelium of the gland itself, and does not appear there as a spread of disease from elsewhere. The fact that many of the primary tumours of carcinoma in the underlying breast are papillomatous definitely excludes the possibility that they are the result only of transplantation or of wandering malignant cells. Papillomata arise from the walls of ducts, and can be primary tumours originating only in the local epithelium.

I shall presently give my reasons for disagreeing with Professor Muir on the subject of Paget's disease of the nipple in some respects. Before doing so I wish to mention again that this point in which Professor Muir agrees with me is of striking importance, and is the only example I am aware of in human carcinoma that supports the theory of a so-called "virus" as an inducing agent of carcinoma. Now that I understand all that Professor Muir has taught me, I find that my conception of Paget's disease of the nipple, which I have held for years[7], does not differ from Professor Muir's description of the disease to any important extent. The points on which I appear to differ from Professor Muir are as follows:—

1. That Paget's disease of the nipple is a disease *sui generis* of the epidermis, and that its morphological microscopic appearances are not true of malignant cells wandering in the epidermis; also, by some means, its presence induces carcinoma in the underlying breast.

2. That a carcinoma spreading into the mucous membrane of the skin and in the epidermis of the nipple does not give rise to Paget's disease of the nipple, although carcinoma frequently exists in the upper ducts in the presence of Paget's disease of the nipple. I regard the carcinoma in the upper ducts as being either induced by the presence of Paget's disease of the nipple, or that the two separate conditions are genetically related to each other as being induced by the same factor or factors.

3. That the main spread of the disease in Paget's disease is due to fresh cells of the epidermis becoming involved as the disease progresses in extent. My opinion of the disease is that it is one of mild malignancy. If a capacity for invasion be a standard of malignancy, then according to my conception of Paget's disease of the nipple it is less malignant than rodent ulcer. If I understand Professor Muir correctly he inclines to the view that it may also be a disease of the epidermis only, the spread of it being due to malignant epithelial cells that are creeping along in the epidermis. This view does not explain the morphological appearances of Paget's disease of the nipple.

To demonstrate this point let me draw attention to the following example of Paget's disease of the nipple.

This patient, seven years ago, noticed a red, itching patch on the top surface of her right nipple. The red, dry, scaly area now covers the right side and front of her chest, and extends over the middle line to nearly the centre of the left side of her chest, as well as downwards in the skin covering the upper and right part of her abdomen. In the centre of the affected area there are raised, convex, sessile protuberances. I could not feel enlarged lymphatic glands anywhere. The thickened skin over the right axilla interfered with the attempt to feel enlarged glands in that region.

According to the cytological examination conducted by Dr. R. J. Ludford, all the convex protuberances, above mentioned, consisted of breast carcinoma, and all the parts removed from the edges of the diseased, dry, red, and scaly area consisted of epidermic cells only, and contained no breast tumour cells. I quote Dr. R. J. Ludford:—

"I have examined this case of Sir Lenthal Cheatle's as completely as possible from a cytological standpoint. The cytological examination proves that Paget's disease of the nipple is a purely epidermic condition, the cells of which could not have been derived from the mammary carcinoma cells of the underlying tumour. During the course of the cytological examination the cells of the carcinoma in the breast and those of Paget's disease of the nipple have been investigated: (1) the chromophility of the cytoplasm (three methods); (2) the cell lipoids, including mitochondria (two methods); (3) the Golgi bodies; (4) the chromatin, as demonstrated by Feulgen's reaction for thymus-nucleic acid. All stages of transition of epidermic cells were seen to be taking place in the same microscopic field from normal cells onwards. There are no malignant cells from the breast tumour in the epidermis in the area of Paget's disease."

I have a specimen of Paget's disease of the nipple of which whole sections of the breast, including the nipple, have been cut and examined. The epidermic changes are identical with the description of the epidermis given above by Dr. R. J. Ludford. There is no carcinoma in the sections. Three separate groups of terminal ducts and their acini are distended by epithelial neoplasia in deep parts of the breast. The terminal duct of one group contains papillomatous formation of a very suspicious nature, but there is no transgression of normal boundaries by

XUM

epithelial growth. This specimen of Paget's disease of the nipple is the least advanced of any I have seen. The disease occupied only a small area on the top of the nipple.

From my point of view Paget's disease of the nipple is purely an epidermic disease of the skin and mucous membrane. It is capable of wide and progressive extension, as seen in the example I have described. The extension is not caused by the wandering of malignant cells into the epidermis, although it may be complicated by the mode of spread that Professor Muir has pointed out. The extension of Paget's disease of the nipple is due to the changes induced in the existing and normal epidermic cells by the advancing and progressing disease.

Before leaving the subject of Paget's disease of the nipple, I again wish to draw your attention to the most important of all facts connected with this disease. Whatever be the explanation of its appearances on the surfaces of the nipple and surrounding skin, there can be no doubt that the epithelium in completely isolated parts of the underlying breast becomes carcinomatous. The carcinoma in these particular parts is due to its appearance at fresh sites of origin, and it is not due either to transplantations or direct spread of cancer cells from elsewhere.

The etiological connection between Paget's disease of the nipple—whatever be its true condition—and the appearance of fresh sites of carcinoma in the underlying breasts is an obvious relation of the utmost interest and importance.

REFERENCES

1. *Brit. J. of Surg.*, **17**: No. 68, 1930.
2. *Cancer Review.* Precancerous Conditions of the Breast, February, 1930.
3. *J. of Path. and Bact.*, **30**: 451, 1927.
4. *Virch. Arch. f. path. Anat.*, **178**: 124, 1904.
5. *Deut. med. Woch.*, **31**: 1,218, 1905.
6. *J. of Path. and Bact.*, **33**: 297, 1930.
7. *Brit. J. of Surg.*, **11**: No. 42, 295, October, 1923.

The Presidential Address*

THE ONTARIO MEDICAL ASSOCIATION, 1930

BY JOHN FERGUSON, M.A., M.D.,

Toronto

RESPICE, aspice, prospice are three words that mean much in the life of every individual and association. For the moment, I may be pardoned if I dwell upon the first of these. It is now fifty years since this Association was called into being. It is with unfeigned pleasure that I look back over these years and recall the remarkable progress made by the medical profession and this Association. What were then unexplored regions are now traversed by numerous well-trodden medical highways. With very little qualification it can be said that our knowledge of bacteria and their relationship to the science of medicine is the product of the toil of investigators during the period covered by the life of this Association. Yellow fever, ague, the plague, anthrax, tetanus, rabies, typhus fever, enteric fever, pneumonia, tuberculosis, syphilis, leprosy, trypanosomiasis, diphtheria, cerebro-spinal meningitis, glanders, cholera, malta fever, and others have been forced to yield the secret of their causation; and, in not a few, to yield to treatment and prevention. One need only mention the almost entire absence of typhoid fever, tetanus and sepsis during the great war which ended only twelve years ago.

Because great medical discoveries come at intervals and, sometimes, at long intervals, we are apt to lose sight of the actual progress made. But if one will take the trouble to compare periods separated by many years the onward march is more readily visualized. If the state of medical science at the beginning of the eighteenth century be compared with that of the beginning of the nineteenth, and this again with the present year in the twentieth, the advances become apparent and startling. Since the birth of the Ontario Medical Association, through the work of Pasteur, Lister, and the investigators in bacteriology, surgery, obstetrics, preventive medicine, and treatment have undergone a rebirth. What humanity owes to these patient workers is beyond the power of figures to express, and yet there are some men to-day occupying places of influence who denounce the experimental and laboratory study of disease. The

*Slightly abbreviated. Delivered at Toronto, May 27th.

marked prolongation of the average duration of life stands as a monumental achievement to the credit of the medical profession, the result of brain power and energy, and, all too often, at the sacrifice of health and life, and unaided by either public or private funds.

To me has fallen the unique experience of an intimate friendship with all the past presidents. From that experience, I can look back upon these predecessors with feelings of the greatest admiration.. Their services to the profession, to the science of medicine, and to humanity, remain as a lasting memorial to their good deeds. Twenty-seven of the past presidents have answered the last roll call, and "passed into that still country, where the hail storms and the fire showers do not reach, and the heaviest-laden wayfarer at length lays down his load." Their lives were a fulfilment of the words of Bailey:—

"We live in deeds, not years; in thoughts, not breaths;
In feelings, not in figures on a dial.
We should count time by heart-throbs. He most lives
Who thinks most, feels the noblest, acts the best."

In order that I might speak with knowledge on the history of this Association, I have read all the presidential addresses, the published proceedings of the annual meetings, and many of the contributed papers. As the result of this study, I desire to place on record my testimony to the lofty ideals proclaimed, the excellent scientific standard attained, and the broad humanitarian spirit manifested throughout. The burden of these fifty years of professional activity was ever thus, "What can we do to better the lot of our fellow beings?" By the severest tests one may choose to apply, the transactions of the Ontario Medical Association will stand comparison with those of the oldest and most renowned associations of a similar kind.

Contrast the professional work we have been considering, founded, as it is, upon the work of the master minds of the past, from Hippocrates down to the present, with the crude, unscientific and one-sided views of diseases and their causes, as set forth in the teachings of the cults that claim a value for their methods which they do not possess. The study of anatomy, physiology, pathology, chemistry, materia medica, and the clinical observation of cases, is only for the purpose of enabling one to treat disease. The culmination of all medical knowledge is therapeutics. Whether it be the giving of a drug, the rubbing of a stiff joint, the incising of an abscess, or the ordering of a bath, we are still in the domain of therapeutics.

It must be borne in mind and should be taught the people that no one of these things constitutes a system of medicine. Take any element of good one may find in the practice of any cult, and, at most, it is only a small fraction of the whole field of therapeutics. The patient should not be deprived of the benefit of other forms of treatment. Fresh air, proper nourishment, and good nursing are very important in the care of a patient ill with diphtheria; but this does not justify the withholding of the life-saving antitoxine. It is quite true, as Tennyson sings,—

"Their little systems have their day,
They have their day and cease to be."

In the meantime, while this "ceasing to be" is going on, the people may suffer much at the hands of imperfectly trained cultists.

It is no longer necessary to argue that there is only one system of medicine, and that system is the scientific one. All other pretended systems arise from the desire to take some short cut to the treatment of disease for commercial purposes. Some one comes along and picks out some feature of therapeutics, gives it a coined name, pushes the method as a new discovery; others take it up, and a cult is born. This is not, however, a system of medicine; it is not even a scientific portion of the science of medicine. It is only an imposition on the credulity of the public. No one should be permitted to diagnose disease and order treatment as a vocation unless he has the license of the medical council of his province or of the Dominion Council.

In the firm stand which this Association has always taken for one portal of entry to the right to diagnose and treat human ills, there has been no element of jealousy, but solely a desire to protect the people, on the same principle that the medical profession has always been in the van in its advocacy of the prevention of disease. In 1925, an Act was passed by which these cults must register under their own Board of Regents. This already has had the effect of very materially reducing their numbers. This Association can claim a good deal of credit for the securing of this desirable legislation. It is necessary, however, for the profession to be ready to act should any attempt be made by these cults to acquire further privileges.

A few words may very fittingly be devoted t the workmen's compensation fees. These, as o well known, were always regarded as inadequ a

XUM

In 1923, however, through the efforts of the executive of this Association, the fees were substantially increased. This increase has the effect of distributing annually to the practitioners of this province about $125,000 more than the former scale of fees would have yielded.

But the Ontario Medical Association has another claim to the support of the medical profession. The post-graduate lectures that are given in various parts of the province were made possible because this Association firmly supported the movement from its inception. After several years' trial these lectures seem to be here to stay.

This Association may be permitted to put forward one more claim for the support of the entire profession of this province. For a number of years, the subject of the creation of a Dominion Medical Council and the formulating of a plan for registration that would admit to practice in all the provinces had been under consideration. The Ontario Medical Association never wavered in its support of the efforts to secure the requisite legislation from the Federal Parliament and the Ontario Legislature. You all know the happy result. We now have a Dominion wide qualification which it is pleasing to observe so many are securing.

The tenth Roman law was "Salus populi suprema est lex,"—the health of the people is the most important law. As time passes and we come to know more about disease and realize better the value of human life, this ancient law assumes larger proportions in safeguarding the lives of our citizens. From the formation of groups of persons for mutual help in time of sickness there has been a steady marching onward to various forms of state medicine. It is now fully recognized that the municipality and the State have certain responsibilities in the matter of preventing disease on the one hand, and, on the other hand, assisting many of those who become ill.

In the early days of March of this year, the House of Commons adopted, without division, a resolution to the effect that the Dominion treasury should bear one-third of the cost of the health units that are now in operation or that may in the future be established. The Rockefeller Foundation defrays the cost for the first three years. By the resolution of the House of Commons, if made effective by the passing of an Act, after the first three years, the Dominion Government would meet one-third, and the interested province two-thirds of the cost of these health units. These units are usually staffed by a medical officer, a public nurse and a sanitary inspector. Each unit has an office and a laboratory. It was pointed out during the debate that the prevention of disease and the health of the people were national problems. Dr. Peter McGibbon stated that the annual loss to the country through preventable illness and death amounted to about $250,000,000. It must be gratifying to the members of the Ontario Medical Association to learn that the position regarding public health and preventive medicine, which it has, from its organization, consistently advocated, is receiving such recognition. Where these units have been established and the children have been subjected to examination, many defects have been discovered that require treatment, which, if not cared for, in many instances would cause permanent damage. In one series of schools, the examinations revealed the fact that only 42 per cent could be regarded as within the normal line. With regard to the 58 per cent who were subnormal, some form of mental defect figured prominently.

The Hon. G. Howard Ferguson, Premier, in the Legislature, on March 18th of this year announced the possibility of enlarging the Ontario Cabinet by the creation of a new department to be called the "Provincial Welfare," with a responsible minister at its head. This move is based on the investigations of the Royal Commission on Public Welfare. This is a movement in the right direction. Ever since its formation, the Ontario Medical Association has urged that the care of the indigent, the insane, the inebriate, the drug addict, and preventive medicine, are tasks for the State,—that is, the entire community, and not the duty of the generous citizen. If one could rightly judge all the elements that lead to such an action as the Premier proposes, perhaps the efforts of this Association would be a major part.

Deaths during the administration of an anæsthetic have recently been in the limelight. It is much to be regretted that these cases were given so much newspaper publicity. It should be made clear to the public that there are persons who, for some unknown reason, do not bear an anæsthetic well. It may be quite impossible to recognize such a condition, and a death might occur in the hands of the most expert administrator, using the purest quality of anæsthetic. Then, again, there are emergency cases, in which some surgical operation is immediately necessary.

In a considerable number of such cases, the patients are not in a good condition for an anæsthetic, but there is no option, as the demand for operation is imperative. Here, again, the greatest care and skill, together with the purest anæsthetic, cannot always avert a fatality. The distinction between death during anæsthesia and death due to the anæsthetic should be made. There is a vast difference; and, yet, to those not familiar with this question, the two conditions are regarded as one and the same, and all are set down as due to the anæsthetic. In some of the recent deaths during the administration of an anæsthetic, there have been inquests, and in all cases it was shown that the anæsthetic was pure, that there was no discoverable carelessness in its use, and that there were conditions that otherwise accounted for the deaths. The juries in these cases exonerated all parties. But the publicity given to these cases has had an intimidating influence upon the people. Surgeons, physicians and specialists are aware of many cases requiring operative treatment, which have been refused by the patients when adults, and by the parents when the patients were children. This is a very serious matter in the case of children with acute appendicitis, empyemata or diseased tonsils. Surely the time has come when more self-possession should be shown when a death occurs during the administration of an anæsthetic. To order an inquest in such cases, as a routine practice, would be most disastrous to the public and the medical profession. It would be just as reasonable to demand an inquest in the case of one who dies suddenly in uræmic coma, where the physician has employed treatment to control the convulsions; or, in the case of puerperal eclampsia, where he has bled the patient.

New discoveries are always welcome. Quite recently, Dr. J. B. Collip, of McGill University, has given out statements of a new product, a crystalline extract from the placenta, that he believes possesses valuable curative qualities in the treatment of a number of female disorders, mainly of the nature of painful and irregular menstruation. Dr. Collip is prepared to supply some of the extract to competent persons to be used in selected cases in hospital practice. It has been employed with encouraging results in the toxæmias of pregnancy. Care is being taken to ensure a properly prepared product. There will be a supervised production of the extract by a responsible institution, once the field of its dependable application is definitely known. From the remarks made by Dr. Collip, the discovery of this placental hormone has been a matter of very laborious research. Drs. Banting and Best, so closely associated in the discovery of insulin, have extended to Dr. Collip their hearty congratulations. The entire medical profession will cordially join in this.

Almost concurrently with the announcement of Dr. Collip's discovery there appeared in *The Globe* (Toronto) the reprinting of an editorial that had appeared in *The Vancouver Sun*. This article severely condemns scientific medical research, as may be learned from the following quotation:—

> "If the Medical Association is now to save itself, it has got to clean house; it has got to drop and drop quickly, its intolerant Fishbeins and Clamps; it has got to stop its commercial orgy of 'immunisation' by filthy vaccine; it has got to adopt a sympathetic and friendly attitude to all branches of therapeutic healing; and the medical colleges and doctors, if they are going to progress, and be of real service to the human family, will have to teach people how to get well and stay well, via the newer knowledge of nutrition and health mechanics."

When one considers what the medical profession has accomplished in the directions of preventing and curing disease, it does seem strange that such statements as the above, should appear in the public press of the country. "Nutrition and health mechanics" would be of no avail in warding off an attack of smallpox in the case of one who had been exposed. "Nutrition and health mechanics" would be worthless if one were bitten by a rabid dog. "Nutrition and health mechanics" could hold out no help to a child struggling through an attack of diphtheria. If the writer of the editorial should ever have an empyema following an attack of pneumonia, he would be well advised to try some better method of treatment than "nutrition and health mechanics."

With regard to the charge of "intolerance", it may be said that the medical profession is very tolerant towards every real addition to medical knowledge; but it does not recognize the kneading of a muscle or the manipulation of a joint as being "advanced branches of healing." To the medical profession, there is nothing new in this. Dr. Covernton, in his presidential address in 1882, laid emphasis upon this very thing.

It is becoming here to make mention of the creation of the Royal College of Physicians and Surgeons of Canada, during 1929. The coming into being of this College is going to have a great influence over the medical profession of this

XUM

country. It will be an incentive to the future generations of the graduates in medicine to aspire to these distinctive qualifications in medicine and surgery. To be admitted by examination to the Fellowship of the Royal College, the applicant must be a graduate of not less than three years' standing of a medical school or university, approved by Council, and must hold a license to practise medicine in at least one of the Provinces of Canada. This should prove a powerful incentive to do post-graduate study and work. It will no doubt prove gratifying to the medical profession of Ontario that the establishment of the Royal College has been accomplished. In 1922, over the signature of Dr. F. W. Marlow, a communication was received by the Ontario Medical Association from the Canadian Medical Association, suggesting the formation of such a College in affiliation with similar Colleges in Britain. Dr. E. R. Secord, in his presidential address in 1923, directed attention to the advisability of creating such a College. It is safe to predict a useful future for this new College. The standard will no doubt be maintained at a high level; and, therefore, its diplomas will be greatly prized and sought after by our brightest and most ambitious practitioners.

Although periodic health examinations in Canada comes under the control of the Canadian Medical Association, it is of much interest to the medical profession of Ontario. After several years of effort, the Canadian Medical Association has made arrangements with a number of Life Insurance Companies, whereby certain policyholders are entitled to a free medical examination by doctors chosen by the policyholders themselves. The companies send a letter to the policyholders as above, informing them of their right to the examination. The policyholder selects his physician and then informs the Secretary of the Medical Association of the choice. The Secretary thereupon notifies the physician to make an arrangement with the policyholder to have the examination made. The physician reports the result of the examination to the Secretary of the Canadian Medical Association. This scheme should be well received.

Above all classes, the medical profession carries the heaviest weight of responsibility; for the doctor, in a very special way, deals with that sacred entity called life. The happiness of individuals and homes is in his keeping. It is, therefore, incumbent upon every practitioner to do the very best that can be done for those who seek his advice. To measure up to this ideal the doctor must be a student. He must keep himself abreast of the times. His patients expect this and are entitled to nothing less. Shakespeare uttered a great truth when he said,—

> "Ignorance is the curse of God,
> Knowledge the wings whereby we fly."

On the other hand the true physician is a reader, a thinker, an observer, a psychologist, a naturalist, one who knows the news of the day, a friend and a guide, and of him one should be able to say,—

> "He hath a tear for pity, and a hand
> Open as day, for melting charity."

From what I have seen of the medical profession of this province, I have every confidence that the second type is almost the universal model.

> "We should count time by heart throbs. He most lives
> Who thinks most, feels the noblest, acts the best."

To those who are with us from the great country to the south, a very hearty welcome is extended. Science has no national boundaries. You, like ourselves, are living true to the great Hippocratic obligation to keep no secrets, but, where a discovery is made, to give it to the world for the good of humanity. It was a great citizen of the United States who said that the rights of mankind are above those of the nation.

I have tried, all too imperfectly, to lay before you a few of the main achievements of the Ontario Medical Association during the first fifty years of its existence. In what has been brought to your attention there is ample to claim your loyal support. But every fair-minded medical practitioner, not yet a member of the Association, must also feel that he owes something to it. In many ways his lot is made happier because of its efforts to elevate the morale of the medical profession. There is in the first place a more friendly spirit in the relationships of one doctor with another, even if not members. In the next, the efforts of the Association with the Workmen's Compensation Board, in aiding the efforts to establish a Dominion Medical Council, and in the securing of a special act to regulate the practice of the cults, are more than enough to create a claim, that amounts to a command, for the co-operation of those who have not yet become members; and there is no other way of co-operating equal to that of joining our ranks.

To those who are of our numbers, most cordial

greetings are extended. It is because of your support that the Association is what it is. It is a great thing to be proud of your Association, but it is a greater thing that the Association should be proud of you. As you take your leave of this annual meeting, and return to your homes and your daily tasks, may you take with you the motto: "Revocate animos et confidenter prospice futurum." Imbued with this idea you will be able to believe as Shelley sang,—

"Man is of soul and body, formed for deeds
Of high resolve; on fancy's boldest wing
To soar unwearied, fearlessly to turn
The keenest pangs to peacefulness, and taste
The joys which mingled sense and spirit yield."

PLACENTAL HORMONES*

J. B. COLLIP, PH.D., M.D., D.SC.,

Department of Biochemistry, McGill University,

Montreal

AS a review of the literature and a progress report of our experiments on this subject have been published before,[2] a summary only of the work to date will now be given.

1. The sulphosalicylic acid extract of human placenta made by the technique of Wiesner has produced, when injected into immature female rats, increased rate of growth of the ovaries and the phenomena of œstrus. Corpora lutea were present as a rule in the ovaries at the time œstrus was first observed. The increased size of the ovaries was due for the most part to the newly formed luteal tissue. This same extract, when injected into immature male rats, has produced an increased rate of growth of the prostate and seminal vesicles.

2. Extracts of human placenta made by the use of acetone (equal volume) or alcohol (two volumes) were found to have similar physiological properties.

3. Acetone or alcoholic extracts of human placenta which have been concentrated and fractionated with alcohol have been divided into three fractions, each of which appears to contain an active principle peculiar to itself and differing in certain properties from each of the other two. The first fraction to be described contains the sex hormone œstrin, now to be known as "Theelin". It is obtained by repeated extraction with ether of the acetic acid acidified aqueous concentrate of the original extract, or of alcohol-soluble fractions obtained from the latter.

The second fraction represents the 85 per cent alcohol soluble material present in the original extract, but from which œstrin has been removed by repeated extraction with ether. Absolute removal of œstrin has been a matter of considerable difficulty, and it has of late been our practice to extract ten times with ether, reacidifying the aqueous phase with acetic acid after each extraction. The name "Emmēnin" has been suggested for the œstrogenic active principle of this fraction.

The third fraction consists of the material which has been precipitated from the original extracts by alcohol up to 85 per cent concentration. This precipitate has been repeatedly extracted with water and reprecipitated by alcohol. Also it has been extracted with ether to remove œstrin. For convenience this may be termed the "anterior-pituitary-like substance" of the placenta.

4. The physiological properties of the second and third fractions only will be described.

The second fraction referred to above has produced œstrus in immature rats in from three to seven days' time, following either oral or subcutaneous administration. In terms of the equivalent of original placenta tissue, the smallest amount required to produce this result has been 0.5 grm. per day. Animals sacrificed at the time of the induced premature œstrus have shown in gross and microscopic examination the typical œstrus changes in both uterus and vagina. A slight increase in the size of the

---

*A paper read in the Section of Obstetrics and Gynæcology at the combined meeting of the British and Canadian Medical Associations, Winnipeg, August 29, 1930.

XUM

ovaries has been associated in many cases with increased development of the follicles. Corpora lutea have not been observed in the ovaries at the time of the induced œstrus. Similar results have been obtained with extracts of this fraction which have been treated with pepsin or trypsin. No demonstrable effects have ever been obtained in male rats, either immature or adult, by the injection or feeding of this fraction.

This fraction has been administered to normal adult female rats in doses varying from 1 to 10 grams of placenta daily or bi-daily over long periods. The results of this study demonstrated conclusively that in the normal adult rat no interference with the œstrus cycle, impregnation, pregnancy or lactation had occurred. It has also been without effect on senile female rats.

A certain number of immature rats treated with the 85 per cent alcohol soluble fraction appear to be immune to its action, and for this, as well as other reasons, it is not possible at present to define the rat unit with any degree of certainty. Another observation, the significance of which is not clear, is that certain immature rats which have been injected daily, although giving the usual œstrus response within a few days, nevertheless have failed to show further œstrus cycles during the period of observation, which in some cases has been as long as 19 days. This is being further investigated.

The immature female rat may accept the male at the induced œstrus period, but in our experience implantation has not taken place until the second or third cycle. Apparently corpora lutea must be present in the rat's ovaries if coitus is to be followed by pregnancy. This is in agreement with observations of Crew and others that puberty does not necessarily represent maturity.

The physiological effects of the third fraction (85 per cent alcohol precipitate) have been studied along the same lines as the second fraction above described.

Injection of this fraction into immature female rats has been followed with remarkable uniformity by the occurrence of œstrus, usually on the fourth or fifth day. Animals sacrificed at this time have shown the usual phenomena of œstrus in both uterus and vagina, but in addition the ovaries have been found to be considerably enlarged and to contain numerous corpora lutea. In fact the picture was practically identical with that obtained by the use of Wiesner's sulphosalicylic acid extract. This alcohol insoluble fraction was found to be ineffective when administered orally, and it was destroyed by boiling.

Immature male rats injected with this fraction have manifested a definitely increased rate of growth of the seminal vesicle and prostate gland in the course of ten days. When the injections were continued for long periods the controls tended to equal the treated animals in regard to the size of the accessory sexual apparatus. Also adult males injected with this hormone manifested hypertrophy of the accessory glands but not of the gonads. Adult female rats have continued to be cyclic with daily injections, but with slight irregularities being manifested at times. Normal pregnancy and lactation have also been observed during such continuous treatment. Post-mortem findings have not as yet been of any significance.

REMARKS

One must conclude from the results outlined above that the human placenta contains at least three distinct active principles, or hormones. These three substances are alike in that all have been observed to be œstrogenic in the immature female rat. The active principle present in the second fraction (85 per cent alcohol soluble) is very similar to œstrin in its ultimate physiological effects. It is ineffective, however, in the castrate, and hence it may be concluded that it functions directly or indirectly by stimulation of the intact ovary. Also it differs from œstrin in the degree to which it is effective by oral administration.

The third fraction prepared from the alcohol insoluble material of the original extract is similar to the other two in that it is œstrogenic. It differs from the emmenin fraction on three main points. (1) It is ineffective by the oral route. (2) It produces corpora lutea in the immature rat coincident with induced œstrus. (3) It causes an increase in the rate of growth of the accessory sex glands in the immature male.

As yet, we have been unable to obtain with surety from pig and cow placenta any of the above fractions other than œstrin. This observation, which must be given further study, suggests that in the human placenta hormones exist which are absent in lower mammalian

forms. This suggestion receives support from the observation that pregnancy urine of certain of the lower forms has failed to give an Aschheim-Zondek pregnancy test when injected into immature mice.

The two œstrogenic placental hormones other than œstrin (Theelin) which have been described appear to us to be the counterparts respectively in placenta of Prolan A. (œstrogenic) and Prolan B. (œstrogenic and luteinizing) of urine described by Zondek and Aschheim.

We are also of the opinion that these active principles are the specific products of placental tissue functioning and are actively related to the condition of pregnancy. The functional interrelationship which must exist between the pituitary sex hormones and those of the placenta can in the light of our present knowledge only be conjectured. Much more research must be done in this field before the data now available can be satisfactorily correlated.

It is a great pleasure for me to state that through the kindness of the Medical Research Council and the National Institute for Medical Research, I have recently been given facilities to repeat much of the work outlined above in Dr. H. H. Dale's laboratory at Hampstead.

REFERENCES

1. ASCHHEIM, *Zeitschr. Geburts. Gynäkol.* **95:** 371, 1929.
2. COLLIP, *Canad. M. Ass. J.* **22:** 761, 1930.
3. CREW, Pres. Address, 2nd Int. Sex Congress, London, August, 1930.
4. EHRHARDT, *Klin. Wchnschr.* **8:** 138, 1929.
5. WIESNER, *Edin. Med. J.* **22:** 761, 1930.
6. ZONDEK, *Klin. Wchnschr.* **9:** 245, 393, 1930.
7. ZONDEK, *Deutsch. med. Wchnschr.* **56:** 300, 1930.

NOTES ON THE CLINICAL USE OF CERTAIN PLACENTAL EXTRACTS*

BY A. D. CAMPBELL AND J. B. COLLIP,

Montreal

THE process of menstruation normally occurs every 28 days, from puberty to the menopause, except when interrupted by pregnancy and lactation. Variations in the length of the interval, the duration of the epoch, or in the amount of blood lost or endometrial tissue shed, are not necessarily pathological, so long as such variations represent individual peculiarities. The conception that the physiological changes in the endometrium leading to menstruation are dependent upon chronological ovarian changes is now generally accepted. Similarly, deviations from the normal menstrual cycle, whether amenorrhœa, polymenorrhœa, or hæmorrhage resulting from lesions of the endometrium other than malignancy and infections, may likewise be considered as secondary to deranged ovarian function.

Since Knauer,[1] in 1896, first demonstrated the effect on the endometrium of ovarian transplants, scores of workers have used various products of glandular origin with a view to correcting menstrual disorders. The demonstration that alcoholic extracts of the human placenta can be separated into three definite fractions, each having distinctive physiological properties, as described in a previous paper,[2] suggests that a clinical trial of each of these fractions should be made. The observations which are herein reported deal in the main with the possible therapeutic value of the 85 per cent alcohol-soluble fraction which has been given the name emmēnin. A few clinical experiments with the so-called anterior-pituitary-like fraction of the placental extract (85 per cent alcohol precipitate) are also included. As yet similar experiments involving the œstrin-containing fraction have not been carried out.

One hundred and thirty-five cases of deranged ovarian function, as judged clinically, have been treated and observed for periods varying from three to nine months. The general results are shown in the table. All the

* A paper read at the combined annual meetings of the British and Canadian Medical Associations, Section of Obstetrics and Gynæcology, August 29, 1930.

From the Departments of Gynæcology and Obstetrics, and of Biochemistry, McGill University, Montreal.

1. *Centralblatt für Gynäkol.* **20:** 524, 1896.

2. COLLIP, *Canad. M. Ass. J.* **23:** 631, 1930.

XUM

TABLE I
SUMMARY OF CLINICAL CASES TREATED WITH EMMENIN

	No. of cases Treated	Improved
Amenorrhœa		
Primary	8	1
Secondary		
Oligomenorrhœa	20	18
Oligomenorrhœa (with lapses)	14	12
Regular (with lapses)	19	11
Dysmenorrhœa	36	26
Polymenorrhœa	8	7
Menopausal symptoms	18	14

patients investigated were apparently normal individuals and pelvic examinations revealed no gross or obvious pathological conditions, either in the conformation and size of the uterus or of its adnexa. From a study of such a comparatively small group of cases for a limited time we are not justified in drawing final conclusions as to the possible therapeutic value of the agent employed. However, our impressions are as follows:

AMENORRHŒA

Primary amenorrhœa. — The results in this group have not been encouraging: out of 8 cases, only one apparent success was obtained.

Secondary amenorrhœa. — The cases of secondary amenorrhœa which have been studied have been arbitrarily placed in one of the following groups, according to their histories.

1. Oligomenorrhœa: Individuals with a diminished or scanty flow, and with periods occurring at irregular intervals of five to eight weeks.

2. Cases similar to No. 1 but having intervals of amenorrhœa of a duration of four months or more.

3. Those with normal menstrual cycles but with periods of amenorrhœa of upwards of four months' duration.

Encouraging results have been obtained in cases in each of these groups.

The duration of the amenorrhœa proved to be of great importance, for no results were obtained where the condition had lasted for more than two and one-half years. The apparent response to treatment of cases in this class occurred after an average period of twenty-three days.

We realize that taken individually any apparent success might be fortuitous.

POLYMENORRHŒA

Eight cases with intervals varying from 18 to 24 days were treated. The intermenstrual period was increased in 7 cases by 4 to 8 days. A favourable effect on intermenstrual pain was also noted.

MENORRHAGIA AND METRORRHAGIA

No evidence was obtained which would indicate that the emmēnin fraction of human placental extract is of any value in treatment of menorrhagia or metrorrhagia occurring either at puberty or in adult life.

DYSMENORRHŒA

It is possible that this condition is in some manner related to the lutein phase of ovarian activity. If the luteal phase were absent during the earlier cycles of the human female, (as it is known to be in a certain number of instances in the rat) a simple explanation might be had for the rarity of cases of dysmenorrhœa dating from the first menstrual cycle. Thirty-six cases of dysmenorrhœa have been studied, and only two of these gave a history of the condition dating from the first cycle. Relief was obtained in 26 cases of this group.

MENOPAUSE

Observations of this type of case led us to conclude that the duration of this symptom complex is of prime importance, since no relief was obtained in cases of long standing, whereas the symptoms were relieved for a time at least in certain cases in which the condition was of recent origin, *i.e.*, less than one year since the last menstrual flow.

DOSAGE

A dose corresponding to 75 grams of placenta daily, given in divided doses in water or orange juice before meals, has been used in the majority of cases. There are individuals who do not tolerate the extract well—the cause of this we do not know—but in any case in which untoward symptoms such as nausea or vertigo have been observed the dose has been temporarily reduced until tolerance was acquired. According to our experience the use of emmēnin does not seem to have any untoward effect on impregnation or gestation. It is worthy of note that four patients became pregnant while under treatment with emmēnin for ovarian dysfunction.

Thirty-six to forty-eight hours after the institution of therapy, some patients volunteered the statement that they experienced a feeling of general well being and of mental alertness. No effect on libido was reported.

As controls, ten cases with normal menstrual

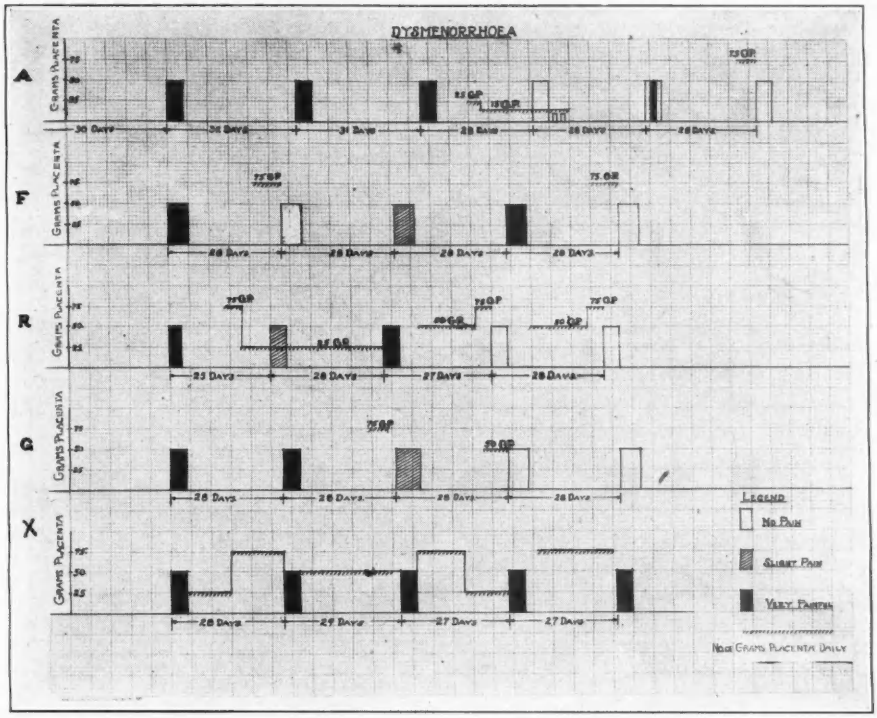


FIG. 1.—Five characteristic cases. Note in case A decreasing intermenstrual interval, and in case R slight lengthening of interval and period, cycle being established in both cases at 28 days. Case G stopped her extract two days before the period on one occasion, and only had partial relief. With proper administration complete relief was obtained. Case X was a problem. Even with varying dosage she received no benefit.

cycles were submitted to treatment for three months without any alteration being noted either in length of the interval or in the duration of the epoch.

Dysmenorrhœa.—The dosage used in cases of dysmenorrhœa was as a rule the equivalent of 25 grams of placenta, administered daily for approximately 17 days, beginning with the cessation of a menstrual period. During the week preceding menstruation (20th to 28th day) the dose was raised to 75 grams of placenta daily and treatment was continued until the onset of the flow and then stopped for a period of about a week. Other individuals with normal cycles obtained relief when treated for seven days preceding the anticipated period.

THE SECOND PRINCIPLE

This principle (85 per cent alcohol precipitate), or the anterior-pituitary-like substance of placenta, was employed in metrorrhagia. The results in this small group of cases have been most encouraging (Fig. 2), and will be discussed in detail in a later communication.[3]

The extract used in these cases contained approximately ten rat units per c.c., and was administered subcutaneously. No enlargement of breasts or milk secretion occurred with the administration of this hormone.

It should be noted here that the diagnosis is essential, and that uterine exploration should *always* precede the treatment. Carcinoma as a cause of metrorrhagia, even in the young, must never be lost sight of.

Of 135 patients observed in this preliminary study basal metabolism determinations were carried out in practically all instances. Sixty were hospitalized for more detailed and special investigation according to the clinical indications. The sella turcica was x-rayed in 33 cases, and blood cholsterol was estimated in 20 cases. The Wassermann reaction was carried out on all hospitalized cases, and this was negative in all cases treated.

In three cases in which the basal rate was elevated, normal values followed treatment with emmēnin. In another case, one of the oligomenorrhœa group, a mild diabetic condition

3. J. B. COLLIP, "Placental Hormones", in press.

XUM

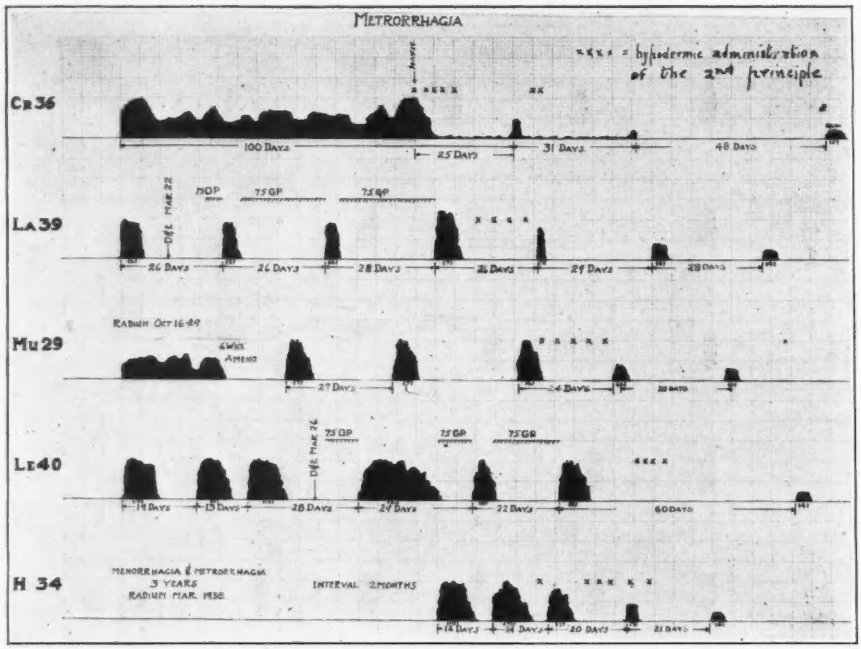


FIG. 2.—Metrorrhagia: In both La 39 and Le 40 the condition was aggravated with emmenin, but as in the other cases relief was obtained with the 2nd principle.

was detected. No significant changes in blood chemistry have been noted as yet, either before or after treatment, in any of the patients examined. Four cases which manifested the clinical signs of anterior lobe insufficiency were quite unaffected by treatment.

SUMMARY OF IMPRESSIONS

1. Emmēnin does not alter normal menstrual cycles.

2. Its effect in dysmenorrhœa has been particularly encouraging.

3. It appears to correct certain types of amenorrhœa of recent origin.

4. It definitely lengthens the cycles in polymenorrhœa.

5. It relieves menopausal symptoms of recent origin, but does not relieve symptoms in castrates.

6. An anterior-pituitary-like principle from the placenta arrests certain forms of metrorrhagia.

7. In the treatment of altered ovarian function the importance of a searching and accurate menstrual history, a detailed medical investigation, and in addition a scrutinizing pelvic examination, cannot be overestimated.

We wish to thank Drs. I. M. Rabinowitch and E. H. Mason for their kind co-operation in the study of cases which were treated in the Montreal General and Royal Victoria Hospitals. Also, we are especially indebted to Drs. Chipman, Fraser and Little for their advice and helpful criticism and for the facilities which they have afforded to further this investigation.

DISCUSSION

PROFESSOR W. W. CHIPMAN (Montreal) pointed out that this work was in a very early stage, and much remained to be done. He thought that the ovarian hormone was stored in the placenta, and was not produced *in situ*. Cases of ovarian deficiency were very difficult to treat, because of the mental state associated with the physiological conditions. A good deal of emmenin was available for experiment.

PROFESSOR V. J. HARDING (Toronto) said there was some confusion between the various substances found in the placenta; he thought it was open to doubt that they were produced *in situ*. Emmenin differed markedly from other organic extracts in that overdoses had no appreciable effect. He found that it had an effect in vomiting of pregnancy which was not entirely mental.

The PRESIDENT spoke of the value of Professor Collip's work on insulin and parathyroid. Although the present investigations were at a very early stage they were likely to give rapid results under Professor Collip's guidance.

PROFESSOR COLLIP, in reply, said that a simple explanation of the presence of emmenin in the placenta was that it is produced there. Its presence in other tissues had not been investigated, but it was quite possible that it might be found therein, just as œstrin was. An important fact was that it is active by mouth, and he thought it should be possible to make a preparation for subcutaneous injection. He had found that emmenin has no effect on the male.

GRANULOMA INGUINALE: ITS PRESENCE IN CANADA*

BY F. S. PATCH, B.A., M.D.,

Clinical Professor of Urology, McGill University,

Urologist, Montreal General Hospital,

Montreal

and

C. L. BLEW, M.D., (LIEUT. M.C., U.S.A.)

Great Lakes, Ill., U.S.A.

THE occurrence of four cases of granuloma inguinale in one Canadian clinic warrants a special report being made of them, and a general review of the subject. The protracted course and destructive character of the disease, when the diagnosis is not made, and when the so-called specific therapy is not instituted promptly, render it of the utmost importance that such cases be recognized at the earliest possible moment after development. The case reports will show the possibility of the introduction into Canada of such tropical or subtropical diseases by overseas trade routes recently developed. Indeed, one of the cases reported seems to have contracted the disease locally.

Granuloma inguinale is variously described as tropical inguinal granuloma, sclerosing granuloma, tropical ulcer, venereal granuloma, groin ulceration, ulcerating granuloma of the pudendum and serpiginous or lupoid ulceration of the genitals. The term we have selected is the one most commonly used. It is, however, unsatisfactory, as the disease is by no means confined to the groin, nor even to the region of the genitalia. Fox suggests "sclerosing granuloma" as a more suitable term.

HISTORICAL

The first cases were reported by K. McLeod from India in 1882. They were in young Hindu males, and were quoted as illustrations of a disease "occasionally met with in India, namely, serpiginous or lupoid ulceration of the genitals." Ozzard and Neal, in 1892, and Conyers and Daniels in 1896 gave the first accurate descriptions of the disease as a clinical entity, reporting cases from British Guiana. The first cases in the United States were reported by Grindon in 1913. Since that date numerous cases have been reported, and Fox[1], in 1926, was able to analyze 150 cases occurring in the United States.

DISTRIBUTION

The disease has a wide distribution in warm countries where, in recent years, it has become almost epidemic. It is not limited to the tropics, however, but is found in temperate zones, particularly in North America. In Asia, it occurs in British India, whence the first cases were reported; Ceylon, China, Siam and the Malay States. The South Sea Islands constitute the greatest source. In Dutch New Guinea, over 5,000 cases were observed in three years. Parts of Africa are affected. In South America, it occurs in Brazil, Uruguay, the Argentines, Dutch and British Guiana, Venezuela, Guatemala, Costa Rica and the West Indies. In the United States, in recent years, many cases have been observed in the Southern States, and more than 80 have been reported from the Northern States. Of the 150 cases gathered by Fox, 88 were observed in the Northern or Western States, while only 62 were reported from the Southern States. It is probable that this does not give a correct idea of the geographical distribution of the disease on this continent. It is obvious that a large number of cases from the Southern States have not been reported. Johns and Gage state that in twelve months prior to 1924 93 cases had been admitted to the Charity Hospital in New Orleans, to say nothing of the cases treated in the clinic.

All nationalities are affected, but the coloured races seem to be the most liable to the disease. In the United States the proportion of negroes to whites affected with the disease is nine to one.

The disease is more common in the male sex, in the proportion of three to two. As the disease

*From the Department of Urology, The Montreal General Hospital.

XUM

is mainly transmitted by sexual intercourse, actively sexual individuals are most affected.

In Fox's American cases, the average age was 30. In New Guinea, however, children are frequently infected.

ETIOLOGY

The first investigations were made shortly after the discovery of the syphilis spirochæte, and resolved themselves into a search for spirochaetes. Many findings were reported. The first to discover the real cause was Donovan, from Madras, in 1905, who found bodies, which now bear his name, in a case of "ulcerating granuloma of the pudenda". A ward boy was admitted for this disease in his mouth. From the deeper parts of the growth, scrapings were taken in which there were found bodies, described as "small forms, oval in shape, about one and a half to two microns in length, found in the

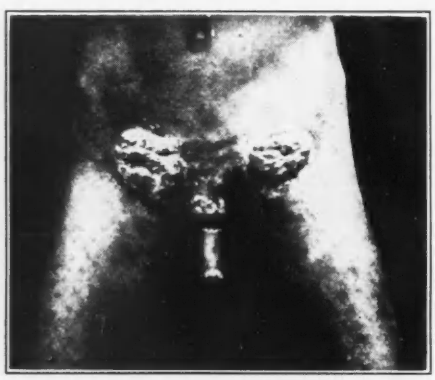


FIG. 1.—Case from New Guinea, (after Mayer and da Rocha Lima).

epithelial cells of the stratum Malphigii, or in the endothelial leucocytes, usually in large numbers, either scattered or in small round compact groups." These findings were confirmed in half a dozen different patients. He regarded the organisms as sporozoa. Later investigators regard them as encapsulated bacilli, which have a certain relation to the Friedländer group. These bacteria, which are now regarded as the cause of the disease, have very changeable forms, at times appearing as cocci or diplococci, at times as bacilli, with or without a surrounding capsule. They are generally found within the endothelial leucocytes. They do not take the Gram's stain and stain well with the Giemsa stain and carbolthionin. Various workers have grown the micro-organisms on culture media, notably Aragao and Vianna in 1913. Inoculations into animals have produced abscesses with some resemblance to granuloma but without its characteristic chronicity.

CLINICAL CONSIDERATIONS

The disease, in conformity to the manner of its conveyance, is found mostly in the genital and anal regions and in their immediate vicinity. The incubation period is in all likelihood short, perhaps only eight days, at the most, two months. The disease appears first in the form of a vesicle, a pustule or papule, which, when squeezed, emits a clear yellow fluid. Spontaneously, or on scratching, ulceration occurs and neighbouring ulcerations combine. The ulcers show very little tendency to healing. Usually the spread is slow, most commonly in folds of the skin, to

FIG. 2.—Extragenital infection, from New Guinea, (after Mayer and da Rocha Lima).

adjoining parts of both skin and mucous membranes. At times, the progress is extremely rapid. The edges of the ulceration are not undermined. The base is bright red and granulating. The clinical picture is very variable. Large granulation masses result or, on the other hand, extensive necroses, with the formation of fistulas. Some lesions are very itchy and some are extremely painful. Healing may take place, with scar formation in some parts, while granulation and ulceration are occurring in others. Contact infections in the individual may occur. Seldom are the lymph glands involved. When they are, they suppurate and break to the surface and form large granulation masses.

Extra-genital infections occur, as in syphilis, on various parts of the body. Numerous

examples are cited in the literature, particularly in the New Guinea cases. Some were infected through the medium of surgical instruments and operations. Generalization of the virus has been noted. Thierfelder (New Guinea) described six such "tertiary" examples in a series of 3,500 cases.

The improperly treated disease has a very

FIG. 3.—Spontaneous healing with extensive destruction, from New Guinea, (after Mayer and da Rocha Lima.) (Possibly the charm was regarded as the curative agent in this case).

chronic course. Some cases are described with a duration of ten to twenty-five years, and are followed by extensive destruction. Mixed infections frequently occur. The general condition is but slightly altered. No rise of temperature occurs. The Wassermann reaction is negative.

DIAGNOSIS

The diagnosis is made by excluding syphilis, chancroid, tuberculosis, cancer, and yaws in regions where it occurs, and by the finding of Donovan bodies in smear or section. These bodies are generally regarded as conclusive proof, though in 50 per cent of cases they are not found. The application of the therapeutic test with antimony has been made with successful results. Care should be taken in the preparation of the smears. The material for examination should come from the depth of the lesion and should be as free as possible from red blood cells. Bleeding can be largely controlled by pressure about the lesion when the material for examination is being taken. The base of the ulcers may be so hard that a sharp curette is very useful in obtaining proper material for examination. A series of thin smears should be made. As already stated, the most satisfactory results are obtained by the use of the Giemsa stain.

TREATMENT

The earliest cases reported were treated by surgical excision, cauterization, and x-rays. While, in a few cases, x-ray treatment has been satisfactory, usually this, like the other methods, was of no value and relapse followed. Antimony and potassium tartrate was first used by Aragao and Vianna in Brazil and reported in 1912. This drug is generally considered as a specific in the disease, and, following its continued administration, the Donovan bodies disappear and the lesions progressively heal. The drug is given intravenously in doses of 5 to 12 c.c. of a 1 per cent solution, with two to three day intervals. The drug requires to be continued after the lesion has healed, otherwise relapse will occur. Randall found less toxic symptoms to follow the use of certain synthetic compounds of antimony introduced by Abel, antimony-sodium thioglycollate, and antimony thioglycollamide. The last named solution has been used in the four cases coming under our observation, with no toxic symptoms following its administration, other than transient joint pains. The drug is injected intravenously, 10 to 20 c.c. of a 0.4 per cent solution every third day, and is continued as long as is necessary to produce healing and prevent relapse. In other words, the treatment should be continued for some time after complete healing.

Full healing will often result after 10 injections, but in view of the danger of relapse, on an average 20 to 24 injections will be necessary. In many cases, however, a much longer period of treatment is required. Three of our cases averaged 35 injections, given over an average period of about four months. Mixed infections, such as gonorrhœa, syphilis, chancroid, phagedænic chancre, the Vincent's angina type of infection, and even diphtheria will occasionally occur, and necessitate appropriate therapy. In one of our cases, healing seemed to be accelerated by the application of an ointment containing bismuth-formic-iodide and iodoform. If the lesions have been extensive, some scarring and deformity is inevitable. Plastic operations may be required. These should be postponed for a period of 6 to 12 months after the ulcers have healed. Kingsbury and Peck[2] advise the use of antimony in the treatment of phagedænic ulcerations of the genitals which have not responded to local

XUM

therapeutic measures. It is possible that some of these cases are really granuloma inguinale.

CASE 1

(M.G.H. 3408, 1926) A white male, 23 years of age, sailor, was admitted to the urological service on July 13th, 1926, complaining of an extensive ulceration on the dorsum of his penis. There was a history of a previous gonorrhœa in 1925; but not of chancre. He was last exposed in San Domingo in February, 1926. Five days afterwards he noticed a small pimple on the dorsum of his penis which broke, exuding a small amount of thin serous material. The lesion gradually increased in size, showing no tendency towards healing. Following this lesion he developed abscesses in both groins which were incised, and which were healed at the time of his admission. Before we saw him, he had had various forms of local treatment, including a course of arsenic and mercury, without any effect on the slowly spreading ulcer.

The physical examination was negative, except for the local condition.

There was a ragged, indolent, slightly tender ulcer 3.5 by 1.5 cm. in diameter, involving the dorsum of the penis, beginning just posterior to the glans penis and extending back over the dorsum and on to the left inguinal region. The base was of a pinkish colour, fairly clean; the edges reddened, undermined and ragged. The Wassermann reaction was negative. No Donovan bodies were found in the smears from the ulcer. A section from the edge of the ulcer was reported by the pathologist as being "chronic inflammatory tissue, non-specific".

The patient was given 33 intravenous injections of antimony thioglycollamide over a period of five months. Because of the joint pains, the injections were discontinued for one week, otherwise the treatment was without untoward signs. After the third injection there was a definite improvement in the appearance of the lesion and the lesion was healed before the thirty-three doses had been administered. Healing was followed by contraction of the scar, with a penile deformity, of curvature upwards, which required a plastic operation for its relief. He was last seen in July, 1930. There had been no recurrence.

CASE 2

(M.G.H. 5414, 1926) A negro, male, 43 years of age, cigar maker, born in Montreal and never out of Canada. Three days after exposure with an individual who likewise had never been out of Canada, he noticed a lesion on his penis which broke and discharged thin watery fluid. He applied for treatment at another hospital and was given various forms of treatment, local applications, ointments, etc., including a course of arsenic and mercury, although the Wassermann reaction was negative. In spite of this the ulceration spread from the penis to the groins, scrotum, perineum and the anus. The lesion was extremely painful, particularly those parts between the buttocks and about the anus. He was admitted to the indoor service of the Montreal General Hospital in October, 1926.

On admission, there was an extensive ragged, undermined, pinkish ulceration which extended from the dorsum of the penis to the inguinal region on both sides, the scrotum, the perineum, the buttocks and the anus. The ulcers were very painful, so much so that satisfactory sleep was impossible, because he could not find any comfortable position.

There was no general glandular enlargement, and nothing was found apart from the local signs. The Wassermann reaction was negative. Smears were taken from the ulcers, but no Donovan bodies were found on repeated search. No section was taken in this case.

This patient was admitted to the hospital at about the time that the diagnosis of granuloma inguinale was made in Case 1. The similarity of the two cases, their chronicity, the failure of ordinary methods of treatment, led, even in the absence of Donovan bodies, to a tentative diagnosis of granuloma inguinale. Both cases were examined by Major George Shanks of the Calcutta Medical School, who confirmed the diagnosis. He stated that in many, as much as half, of the cases he had observed in India the Donovan bodies were not demonstrated. They were accustomed to apply the therapeutic test with antimony. "In the event of the disappearance of the lesions, there could be no great doubt as to the nature of the condition."

Antimony thioglycollamide was commenced at the same time as in Case 1, and in similar dosage. Thirty injections in all were given, two days apart. After the fourth day the pain ceased, the lesions ceased to spread and healing progressively occurred, with scarring. He was last seen in May, 1927, without any recurrence of the disease.

CASE 3

(M.G.H. 3776, 1928) A negro, male, 23 years of age, sailor, was admitted to the Montreal General Hospital on July 5th, 1928. Five days after exposure in December, 1927, while in British Guiana, he noticed a small ulcer about 5 mm. in diameter on the skin of the prepuce, gradually enlarging and deepening until the date of admission. He applied for treatment in another hospital in the city. The blood Wassermann was negative, but in spite of this he was given 15 arm and 15 hip injections, presumably of arsenic and mercury, without any improvement. The Wassermann test was doubtful after the course. The patient had had gonorrhœa and chancroid. Syphilis was denied.

FIG. 4.—Case 3, showing lesions on glans penis, The white area shows healing.

The examination showed the following: On the ventral surface of the penis, beginning at the glans and extending upwards for about 2.5 cm. laterally to the dorso-lateral margin of the penis, was an ulcer with a clean base, indurated edges, irregular border, tender to touch, and with a urethro-cutaneous fistula opening at one edge of the ulcer. The base was smooth and pinkish and did not bleed. The ulceration was very painful. The Wassermann reaction was doubtful on one occasion and positive (+) on another.

A section was taken from the edge of the ulceration. The pathological report by Dr. L. J. Rhea was as follows: "The section shows skin and underlying tissue. The epidermis is hypertrophied and the interpapillary pegs are long and slender. Some of the surface epithelium is denuded. In the papillæ and deeper corium there is a great fibroblastic reaction and a diffuse infiltration with lymphocytes, plasma cells, eosinophiles, polymorphonuclear leucocytes and large mononuclear cells with vesicular nuclei. The tissue is not very vascular except

at certain points near the surface, where injection is marked. Many of the small blood vessels show hyperplasia of their endothelial lining as well as thickening of their walls. In some places the small vessels show hyalinization. There are masses of dark brown pigment scattered throughout the corium. There are a few large multinucleated cells. Some are lying in the dense tissue, others lying in an area of open reticulum. Donovan bodies are found in smears from the base of the ulcer and in sections fixed in corrosive sublimate and alcohol, and stained with Giemsa's stain."

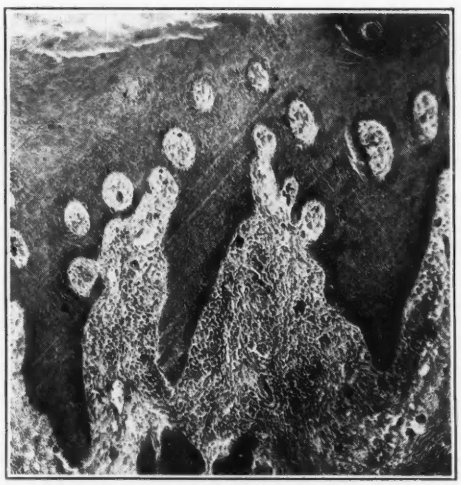


FIG. 5.—Photomicrograph of snipping from Case 3. Note the long downward growth of epithelium, the fibrosis and cellular infiltration of the sub-epithelial tissue.

The patient was given antimony thioglycollamide, 40 injections of 20 c.c., on an average, one every two days for four and a half months. Recovery was slow. Sloughing of the entire glans occurred before healing was obtained. This was aided by the application of bismuth-formic-iodide, and iodoform, which proved so useful in Case 4, which indeed suggested its use. In the process of sloughing, the fistula disappeared. The patient complained bitterly of pain in the ulceration. Not until healing had occurred, did the pain disappear.

CASE 4

A white male, sea captain, 34 years of age, was exposed in January, 1928, with a white woman in Martinique, West Indies. Three days afterwards two small sores appeared on the glans near the urethra. He applied various lotions and was given some arsenical preparations intravenously, though the Wassermann test was negative. One sore healed completely, the other partly, but soon broke down again and remained until he was seen by one of us on July 17th, six months after the sores' first appearance.

On examination, a jagged ulceration was seen at the meatus urethræ. Both edges had ulcerated away, leaving a golf hole opening. The base was pitted, clean and hard. The glands in the groin were not enlarged. The Wassermann reaction was negative. Smears were made by Dr. L. J. Rhea from the base of the ulceration and numerous Donovan bodies were found, both intra- and extracellular forms being present. The intracellular bodies were within endothelial leucocytes. Those without the cells were, in places, near a broken up endothelial cell and probably came from these fragmented cells. The number of bodies within a single cell varied. In some there were few; other cells were packed with them. Between these extremes were all gradations. The bodies showed the typical shape and staining reaction of Donovan bodies. In many instances the capsule-like periphery was very sharply defined.

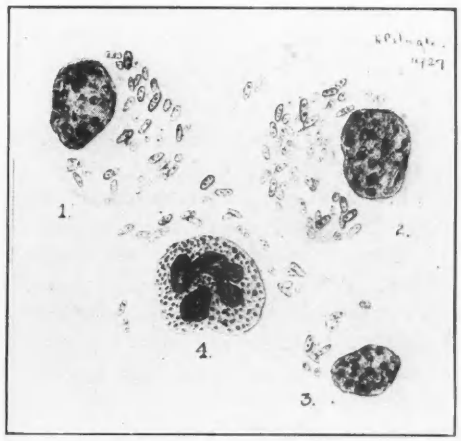


FIG. 6.—Semi-diagrammatic drawing of smear from Case 4. Note the intracellular bodies in endothelial leucocytes 1, 2 and 3. Cell 3 is fragmented. Cell 4 is a polymorphonuclear leucocyte for comparison. A few extracellular bodies are present.

The patient was given antimony thioglycollamide, 20 c.c. intravenously, and a supply of ampoules of the drug, as his duties called him away to sea. The subsequent injections were given at irregular intervals. He was seen again on September 5th, having had six further injections, all of 20 c.c., except one, of 15 c.c. The ulceration was markedly improved, and only a small area just within the urethra remained. He was seen again in November, having had nine further injections. At this time only a spot the size of a pin head remained. After the fourth injection, he began to have shoulder pains, and the sore became larger. Improvement followed further injections and the application of an ointment of bismuth-formic-iodide and iodoform.

SUMMARY

Four cases of granuloma inguinale have been observed in Montreal. In three, the disease was contracted in the tropics. The fourth seems to have originated in Canada. In all four there was a preliminary confusion with syphilis. Donovan bodies were found in two of the cases. After chronic courses, all yielded to treatment with antimony.

REFERENCES

A complete bibliography will be found at the conclusion of a comprehensive study of the subject by Mayer and da Rocha Lima in Jadassohn's "Handbuch der Haut und Geschlechtskrankheiten", Berlin, Julius Springer **21**: 433-462, 1927. The other references given here are not to be found there.

1. FOX, *J. Am. M. Ass.*, **87**: 1785, 1926.
2. KINGSBURY AND PECK, *J. Am. M. Ass.*, **87**: 1900, 1926.

XUM

CONSERVATISM IN THE TREATMENT OF INFECTIVE BONE LESIONS OF THE FINGERS*

By L. H. McKim, M.D.,

Montreal

IT is not my purpose to discuss all the various factors that may enter into the decision as to just when a finger should or should not be amputated. It is a generally acknowledged fact that in infected cases amputations are frequently performed, rather than the patient should be submitted to a much more prolonged period of treatment for an infective process. It may also be admitted that in industrial work this may be in many cases an economical procedure, both from the standpoint of the employee who often prefers to lose a small portion or even the whole of one of his less important fingers so as to permit his early return to work with full pay; and from the standpoint of the employer, for whom it is much cheaper to pay the small percentage of permanent disability allowed in such cases than to pay the injured man's salary, as well as his medical expenses over a considerably longer period. But, even allowing for the full weight of these considerations, we should not lose sight of the fact that only very rarely is it absolutely necessary to sacrifice a finger on account of an infective process involving the bone.

The importance of a conservative attitude in dealing with infections of the fingers, particularly those with bony involvement, cannot be too strongly emphasized. In the experience of the author only too often does one hear the story from the patient "The doctor took an x-ray of my hand and found it was necessary to scrape the bone." It would seem that to many practitioners the presence of a periostitis, osteitis or osteomyelitis is an indication for the use of the curette, with all its disastrous consequences, or even for immediate amputation. It is my belief that of the large numbers of fingers constantly being amputated many might be saved if the significance of the radiological findings were better understood, especially by surgeons engaged in doing industrial work.

FIG. 1.—Case 1.

FIG. 2.—Case 1, at the end of one month showing repair to terminal phalanx.

FIG. 3.—Case 1, at the end of one year. Slight over production of bone at site of abscess cavity.

The following cases are illustrative of certain important points in this connection:

CASE 1

Fig. 1 is a skiagram of the terminal phalanx of the index finger of a nurse, 72 hours after pricking her finger with a safety pin. Note the small abscess cavity with absorption of bone from the radial side of the

* Presented before the Interurban Surgical Society, Montreal General Hospital, May 2, 1930.

terminal phalanx just beneath the periosteum. In this case the period between the primary injury and the appearance of actual bone destruction is considerably less than is usually thought necessary for such a process. It is probably accounted for by the early cutting off by œdema of the blood supply to the "closed space," as described by Kanavel. This finger was incised about

Fig. 4.—Case 2. Note sequestration of proximal phalanx.

two hours later (74 hours after injury) using a "fish-mouth" incision. The operation being performed in a bloodless field, a pocket of pus lying beneath the periosteum was easily demonstrated. The wound was packed with B.I.P.P. and liquid paraffin. The packing was removed on the fifth day, after which the wound was dressed on alternate days with sterile liquid paraffin until the eleventh day, when the edges were strapped together with adhesive. Primary union of the skin occurred and the patient was able to return to duty on the 14th day. All dressings were discarded about the twentieth day.

The points to be noted in this case are: (1) the early absorption of bone in the terminal phalanx in infection following injury; (2) the prompt arrest of the infective process under appropriate treatment; (3) the complete recovery in a comparatively short time.

Case 2

In this case there was a very severe infection of the index finger, involving the proximal phalanx, and encroaching upon the proximal interphalangeal joint, with sequestration of the distal three-quarters of the proximal phalanx. (Fig. 4). The finger was widely incised on the lateral aspect, the sequestrum was removed, and the cavity packed until the acute infection had subsided. After the removal of the packing the finger was loosely splinted, the tendons being allowed to contract and the finger to shorten.

The ultimate result, as seen in Figs. 5, 6 and 7 (taken 2 years later), was a shortening of the index finger to a little more than one-half of the normal length, but there was extremely good function, the patient being able to lift a weight of eight pounds with the finger in a position of flexion.

Case 3

Severe infection of index finger following a wound on the ulnar side of the middle phalanx on September 15, 1928, as shown in Fig. 8 taken on September 22nd, two days after incision of the finger on the lateral aspect; there was swelling of the soft parts only.

On October 15th, when the case first came under the observation of the author an x-ray showed apparent beginning sequestration of the distal portion of the middle phalanx (Fig. 9). From the time of injury until this date the finger had been treated with moist dressings. On October 16th, under general anæsthesia, and in a bloodless field, the finger was widely incised on its ulnar side. The bone of the distal half of the middle phalanx and of the proximal portion of the distal phalanx appeared to have completely lost its periosteal covering and a destruction of bone at the line indicated in the x-ray could be clearly made out. The distal interphalangeal joint, however, did not appear to be involved. It was felt that an attempt to save the finger might prove successful, or that, at least, if amputation were necessary this might more safely be performed in a few days, when the tissues had somewhat recovered from the effect of the prolonged moist applications. The wound was treated by packing with B.I.P.P. and subsequent dressings with liquid paraffin. Rapid healing of the soft tissues occurred as seen in Fig. 10, which was taken on November 5th. The distal end of the middle phalanx still looks suspiciously like sequestrum formation.

Fig. 5.—Case 2; two years later.

Fig. 6.—Case 2; lateral view to show degree of flexion possible.

Fig. 7.— Case 2; x-ray two years after lesion.

XUM

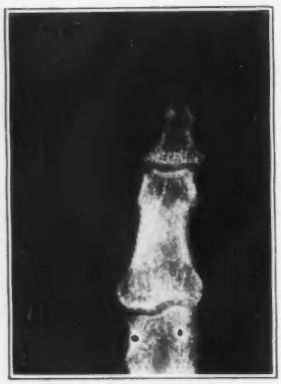


FIG. 8.—Case 3, one week after beginning of infection.

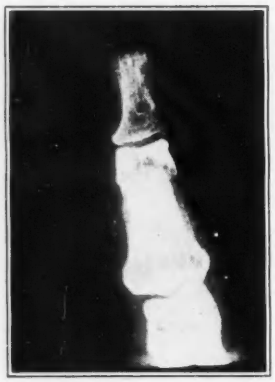


FIG. 9.—Case 3, early sequestration in middle phalanx.

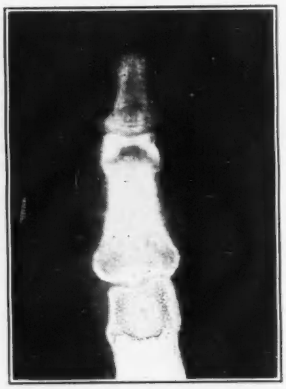


FIG. 10.—Case 3, healing of soft tissues; line of sequestrum still visible.

FIG. 11.—Case 3, showing complete healing.

In about six weeks healing was complete, and another x-ray was taken (Fig. 11). No sequestration occurred. Although the skin remained very tender for a number of months, the man eventually had a very useful finger with a range of movement of approximately two-thirds of normal in the distal interphalangeal joint.

CONCLUSIONS

1. Bone changes, due to infection and demonstrable by x-ray, occur earlier in the terminal phalanx of the finger than elsewhere in the body.

2. The presence of a bony lesion, demonstrable by x-ray or by operation, does not necessarily mean that sequestration will occur.

3. If, and when, sequestration does occur, the loss of even a large portion of a phalanx does not necessarily call for sacrifice of the finger.

RAYNAUD'S DISEASE AND ARSENIC RETENTION.—A. F. Kraetzer calls attention to recent work by Throne and Myers on arsenic retention and eczema, and mentions many unsuspected or little known sources of arsenic; among them are woollen and cotton fabrics, silk impregnated with tin, tobacco, and some common medicaments such as rhubarb and soda, sulphur, and calamine and zinc lotions. He records the case of a woman, aged 38, who had worked for fourteen years in a greenhouse where insecticide sprays containing arsenic were in daily use. After attacks each spring of pruritic rashes on the hands with frequent soreness of the throat, chronic constipation, and general poor health, she began to exhibit signs of Raynaud's disease in the fingers and toes, which caused great pain and inconvenience. The attacks were almost invariably brought on by motoring in cold weather. Physical examination of the patient showed signs of arsenic retention, and thirty-six hours after the intravenous injection of 1 gram of sodium thiosulphate the urine was found by the Marsh test to contain 0.068 mg. of arsenic per 100 grams of dried material. A five weeks' course of bi-weekly injections of 1 gram of sodium thiosulphate was given, after which the dose was continued once a week. At the same time the patient was placed on a low carbohydrate diet, with enemas of sulphonated bitumen, and quarter-grain doses of thyroid extract twice a day. Diminution of the severity of the trouble was soon noticed and was steadily maintained. The toes soon cleared up; the agony during the recovery stage after putting the hands in warm water became less acute and then disappeared. The congestion stage shortened and then vanished, so that at the end of two months she was free from attack, even after driving her car in cold, wintry weather.—*J. Am. M. Ass.* p. 1035, April 5th, 1930.

PREGNANCY COMPLICATING HYPERTHYROIDISM AND FOLLOWING THYROIDECTOMY*

BY GORDON S. FAHRNI, M.D.,

Assistant Professor of Surgery, University of Manitoba, Winnipeg

THE management of hyperthyroidism with coexisting pregnancy, and the result of pregnancy following a recent thyroidectomy, are questions upon which there is not universal agreement. Pregnancy and severe hyperthyroidism are not commonly associated but do so occur occasionally and require very careful management.

Mussey *et al.*[1] state that in the examination of 7,228 women with hyperthyroidism, pregnancy was found in only 42. The work of Knude *et al.*[2] shows that in rabbits with severe hyperthyroidism experimentally induced, the processes of œstrus, ovulation, fertilization, migration and implantation take place, but in most cases the young are never born, resorption occurring instead. Resorption of all or many of the fetuses occurred during the latter two-thirds of pregnancy. Gardiner-Hill[3] states that the prospect of a normal baby is bad when hyperthyroidism exists during pregnancy.

The work of the last writers quoted would suggest that elimination of the hyperthyroidism early in pregnancy would be a desirable procedure. Falls,[4] however, advises conservative treatment when pregnancy and hyperthyroidism coexist.

I wish to report the results obtained in this type of patient in my own practice in the five years immediately preceding 1930.

In order to obtain information on this problem, I sent a questionnaire to all women of child-bearing age on whom I had done a thyroidectomy during this period. The material in this paper is made up from the information received from the questionnaires returned duly completed and from my personal records. A number of the questionnaires were returned by the post office because of incorrect addresses, and a still greater number were not returned, so that, no doubt, this report does not include all the women who became pregnant following thyroidectomy. This series includes only the women who were pregnant at the time of thyroidectomy and those who became pregnant within two years after thyroidectomy.

In the whole series there were 73 women. Of these, 14 were pregnant at the time of operation, 22 became pregnant within one year after operation, and 37 became pregnant the second year after operation. In addition, 10 women reported miscarriages within two years after operation, some of these women becoming pregnant a second time within the two years and going on to term, in which case they are included in the above group. In no case was it stated whether or not the miscarriage was self-induced or brought on as a therapeutic measure.

In the group studied there were 28 primiparæ and 45 multiparæ. There were 4 pairs of twins, all of whom were reported to be normally developed babies, two of these twin pregnancies being in women who were operated on when 3 months pregnant. Eight women became pregnant a second time within 2 years after operation, so that including these second pregnancies and the four pairs of twins, there were 85 babies and 73 women in this series.

In the group of 14 women having thyroidectomy done during pregnancy, 11 had exophthalmic goitre and three toxic adenomatous goitre. All of this group had moderately severe hyperthyroidism showing increased metabolic rates corresponding to the respective hyperthyroid states.

In 13 cases the time of operation varied from 6 weeks to 4 months in pregnancy. The 14th case was operated on when 6 months pregnant. This woman, a multipara, had a very large

* Read at the annual meeting of the American Association for the Study of Goitre, held in Seattle, Wash., U.S.A., July, 1930.

XUM

adenomatous goitre with moderately severe hyperthyroidism. Her basal metabolic rate was plus 47 per cent. Her physician stated that one year previous to this she had been confined, that she had been very sick all through her pregnancy, and was confined when critically ill. He sent her to me with the recommendation that this pregnancy should be interrupted or the goitre removed. On this account, after the usual preparatory treatment, a thyroidectomy was done. Her recovery after operation was satisfactory, but 6 weeks later premature labour came on but the fetus was still born, apparently having been dead some time before birth. The fetus seemed to be normally developed. This woman was quite ill immediately after operation, and was given a transfusion of 400 c.c. of whole blood a few hours after the thyroidectomy. This may have contributed to the death of the fetus.

One woman of this group, who was operated on when three months pregnant, made a satisfactory post-operative recovery but three months later developed severe uterine hæmorrhage, which was due to placenta prævia. Labour came on at this time and she was delivered of twins, both alive at birth and normally developed, but they died shortly after, being three months premature. The mother made a good recovery. The other 12 women operated on when pregnant went to full term and were all delivered of healthy, normally developed babies, one being a twin pregnancy. All the babies did well.

In the group of 59 women who became pregnant within two years after thyroidectomy and went on to confinement, 35 had been operated on for exophthalmic goitre, 8 for toxic adenomatous goitre and 16 for non-toxic nodular colloid or non-toxic adenomatous goitre. Six of these women were confined one to two months prematurely, but all the babies were normal and lived. The other 53 women went to full term, three babies dying at birth, but all were reported as normally developed and free from any congenital deformity. The cause of death given in the case of these three babies was difficult labour. The other 50 babies were reported normally developed in every sense and all did well after birth.

All the women in both groups made a good post-partum recovery with the exception of one, a primipara, who had been operated on 18 months before for exophthalmic goitre. This woman, following confinement, developed eclampsia from which she died.

In the whole group of 73 women, 1 died of eclampsia. Of the 85 babies born, 6 died; 1 was still-born at seven and one-half months; 2 (a twin pregnancy) died following birth at 6 months' gestation, the premature birth being due to placenta prævia; the remaining 3 deaths were attributed to difficult birth.

The remaining 79 babies were apparently normal and did well following birth. Although the questionnaire asked specifically for congenital deformities of the babies, such as monstrosities or more minor disfigurements, all babies were reported free from any such impairment. Williamson[5] reports a number of congenital deformities in babies born of mothers who became pregnant a short time after thyroidectomy.

The type of operation done in all the women with exophthalmic goitre was a moderately radical bilateral resection of the thyroid lobes and complete removal of the isthmus. In the other forms of goitre, a slightly less radical operation was done in many cases, particularly in the non-toxic types. A few were done under local anæsthesia, but the great majority were done under light ethylene and oxygen anæsthesia, combined with local infiltration of novocaine solution.

All the hyperthyroid women were given Lugol's solution in doses of 10 to 20 minims t.i.d. for from 5 to 14 days before operation and for varying periods after operation.

CONCLUSIONS

When pregnancy and hyperthyroidism exist at the same time, I consider that if the patient is less than five months pregnant a thyroidectomy is the preferable procedure. I do not think the risk to the patient is much increased by pregnancy, and there seems to be very little danger of miscarriage. I have yet to meet with a miscarriage or abortion under these circumstances. In my opinion the interruption of pregnancy at three to five months is much more dangerous than a properly conducted thyroidectomy. After the operation, the pregnant woman is in such physical condition as to be able to go through to confinement in a compara-

tively normal manner. Her condition a short time after operation contrasts very favourably with the highly nervous toxic state often seen before operation, and without operation there is no reason to suppose that this condition will improve much as pregnancy advances. Indeed it may become aggravated, as I have found in a number of women.

In women six to nine months' pregnant I favour conservative treatment rather than thyroidectomy. After confinement the patient may wisely come to operation but not too soon after.

In considering the advice to give women who have recently had a thyroidectomy, I favour advising them against pregnancy for at least two years, but should they become pregnant in the interval, I certainly think there is as a rule no justification for advising interruption of pregnancy. My opinion on this question has become steadily more positive as I have followed such patients as have been reported in this paper. Particularly do I wish to call attention to the absence of congenital deformities in these babies, which is not in full agreement with the opinion expressed by a few other writers.

REFERENCES

1. MUSSEY *et al., J. Am. M. Ass.* **87:** 1009, 1926.
2. KUNDE *et al., Am. J. Phys.* **87:** 747, 1929.
3. GARDINER-HILL, *The Lancet* **216:** 120, 1929.
4. FALLS, *Am. J. Obst. & Gyn.* **17:** 536, 1929.
5. WILLIAMSON, *Am. J. Obst. & Gyn.* **14:** 196, 1927.

RESPIRATORY COMPLICATIONS FOLLOWING SURGICAL OPERATIONS*

BY D. C. AIKENHEAD, M.D.,

Winnipeg

THE subject of respiratory complications following surgical operations has been a source of worry to all concerned, while endless controversies have arisen as to the part inhalation anæsthesia plays as a causative factor. There was a time when almost every post-operative complication, barring hæmorrhage, was put down to the latent influence of the anæsthetic. One hundred per cent of the vapour necessary to produce anæsthesia passes through the lungs to the patient, while ninety per cent is excreted by the same route. Any abnormal post-operative lung trouble is so easily put down as "irritation" from the ether. "Time heals all things." During the last decade, the etiology of respiratory complications has changed; the extensive use of novacain for major surgical procedures, with subsequent pulmonary lesions, has brought forcibly to mind that other factors besides ether-irritation enter into respiratory complications.

In the following analysis of lung lesions following a four-years' period in a large general hospital, the only claim I make for originality lies in the compilation of data peculiar to this hospital and geographical situation. In the short time at my disposal, I shall only touch upon a few of the salient features, leaving the discussion following to fill in details upon the various headings.

As you are well aware, series of cases giving the pulmonary complications following surgical operations vary widely in the ratio to numbers of operations; so much so that comparisons are of limited value. An extensive review of the literature upon the subject varies in the interpretation of the end-results. However, one finds agreement upon some points. For example, operations on the upper abdomen and patients with gross sepsis show a higher ratio of post-operative pulmonary trouble than is met with in other cases. Considering the magnitude of modern surgical procedures, one wonders whether respiratory lesions are not more frequent than the records would indicate. For comparative purposes I am including a limited number of reports from other hospitals. These comparisons are not invidious, as climate, surgical technique, type of operation, suggest a wide variation in the end results.

Silk[1], in 1897, reported 5,000 operations with 13 respiratory complications. Of these thirteen, 5 followed operation upon the tongue or jaws. Thirty years ago laparotomies were not entered upon so lightly as at the present day.

Mickulicz and Henle[2] reported that in 1,787 upper abdominal operations 8 per cent, or 143 patients, developed lung lesions. Mickulicz states

*A paper read in the Section of Anæsthesia at the combined Meeting of the British and Canadian Medical Associations, Winnipeg, August 28th, 1930.

that as many respiratory complications follow after local as after general anæsthesia. Armstrong[3] in 2,500 major operations in Montreal gives 2.2 per cent, or 55 cases. Featherstone[4], in a most exhaustive review of the literature, quotes 222 gastric cases from Birmingham with a morbidity of 10.81 per cent. Whipple[5], at the Presbyterian Hospital, New York, reporting upon 3,719 patients, found that 97, or 2.3 per cent, developed post-operative lung lesion. Elwyn[6], reporting from the wards of the Mount Sinai Hospital, New York, states that 299 operations under some form of local anæsthesia gave 11 patients with some form of pulmonary trouble, or 2.7 per cent. The author of this report[7] has given a brief survey upon 7,000 operations followed by 19 respiratory complications.

The series now reported upon consists of 33,066 operations performed during the years 1926-27-28-29. Thirty-one thousand three hundred and one were conducted under general anæsthesia; the remainder, 2,765, were under some form of local anæsthesia. According to the hospital records there were 55 respiratory complications, with 23 deaths.

Before going into a detailed analysis of these 55 cases a few words stating pre-operative routine might not be out of place. Perhaps sixty-five per cent would have a preliminary injection of morphine sulphate, gr. 1/6, combined with atropine sulphate, gr. 1/150. We rarely use large doses of morphine. Great care is exercised in excluding patients with a cold or coryza from operation, even if afebrile. Patients with a history of recent respiratory trouble or tonsillitis are postponed for from two to four weeks. More than half of this series received ether dropped upon a thick cotton fabric supported by a wire frame; a mixture of chloroform, two parts, ether, three parts was added in any operation where ether would not give sufficient relaxation by itself. Nitrous oxide and ethylene were given by McKesson machines. One in six would be a rough estimate of gas anæsthesia. Post-operative ward treatment varied widely according to the individual clinician. The gravity of the operation ranged widely, from excision of a sebaceous cyst, or brief dental extractions, to thousands of appendectomies and herniotomies, heavy operations upon patients with grave renal, cardiac, or pulmonary conditions. The age of the patients varied from four days to over ninety years. One feature that strikes one most prominently, when first looking at the morbidity of this series of cases, is the number of patients with pathological changes additional to that for which the operation was designed to relieve. Kipling states "Indeed when you come to think of it, had the British Army consistently waited for reserves in all its little affairs, the boundaries of our Empire would have stopped at Brighton Beach."

In the 55 respiratory complications recorded in this report, 13 were of a minor nature —7 infarcts and 6 pleurisies; the remaining forty-two were pneumonic processes. Of the 42 major complications 9 occurred after emergency operations. Sixteen patients, including 7 of those previously mentioned, had marked elevation of pulse, temperature, and respiration at the time of operation; 9 were over sixty years of age. Twenty-three, or more than half of the operations were upon the gastro-intestinal tract, including herniotomies. Another interesting point is the gravity of the sepsis at the time of operation. Twenty-three of the 42 patients manifesting major complications died. At the time of operation 19 of these 42 had gross sepsis. Of these 19 patients with sepsis 14 died, or 73 per cent. Twenty patients out of the 55 originally mentioned were first-class operative risks, with one death. Compare this with the 35 sub-standard patients with 22 deaths.

In 1929, of 1,772 abdominal operations 6 were followed by respiratory complications, and there were two deaths. Both of the patients who died were over seventy years of age and had undergone emergency operations. In the same hospital, in 1922, Dr. H. Morrison[8] reported upon some 408 patients who had been operated on for appendicitis, with one death from pneumonia. Broadly speaking, this report agrees with the ratio of respiratory lesions given for 1929, that is, a morbidity of 6 in 1,772 cases.

The incidence according to sex was approximately equal in this series. Some writers state that respiratory complications occur more frequently in males than females, owing to the difference in the type of breathing in the two sexes. Regarding age, each decade over forty years adds to the operative risk. As to the type of operation, fair comparisons are difficult to establish. An American writer states that post-operative pulmonary complications occur in 14.8 per cent of stomach operations and 5 per cent of operations upon the gall bladder, averaging 7.7 per cent. No definite conclusion can be stated as to the length of operation. A number of the poor risks had anæsthetics for a

short period and succumbed. One might say that the shorter the time under a general anæsthetic the less interference there is with the vital processes of the body. Gas anæsthesias carried with them a higher ratio of pulmonary lesions than those with ether, but in so many instances gas was given in preference to handicapped patients. Neuhoff[9] reports 500 autopsies following surgical operations. Pneumonia was diagnosed pre-operatively in 81 cases, and found post mortem in 51 subjects, or 60 per cent. He states also "that a diagnosis of post-operative pneumonia in sick patients is fraught with difficulty and the classical physical signs of pneumonia do not prove its presence in serious post-operative conditions." In addition, Neuhoff found pneumonia a much more common cause of death in clean than in infected wounds—eleven per cent in the former, 1.5 in the latter.

A theory to account for lung infection may be advanced. The splinting of the abdominal muscles due to pain in the wound and tight binders cause more or less circulatory stasis in the bases of the lungs. To this area of stasis infection tracks up by way of the lymphatics through the diaphragm. Collyros believes that atelectasis and pneumonia are different phases of the one process. He says, "In the atelectatic portion of the lungs the vessels exude a sticky secretion. This secretion prevents the passage of air, consolidation follows, after consolidation infection follows so easily."

Conclusions

1. A post-operative pulmonary complication is a serious barrier to recovery. Forty per cent died in this series. Of 13 patients with elevation of pulse and temperature at the time of operation 11 died, or 84 per cent.

2. Taking into consideration the number and gravity of modern surgical procedures, pulmonary complications following operations are less than might be expected. In this series 15 per cent were seventy years of age; 21 per cent had elevation of the pulse, respiration and temperature at the time of operation.

3. Sepsis (gross) at the time of operation is a greater risk than post-operative pneumonia.

4. Careful selection of patients before operating, with equal attention to the after care will keep respiratory lesions down to the minimum, until such time as a definite cause is known for this dreaded operative sequel.

References

1. Silk. *Brit. M. J.*, **1**: 978, April, 1897.
2. Mickulicz and Henle, *Arch. f. klin. Chir.*, 1901.
3. Armstrong, *Brit. M. J.*, **1**: 1141, May, 1906.
4. Featherstone, *Brit. J. of Surg.*, **12**: 487, January, 1925.
5. Whipple, *Surg. Gyn. & Obs.*, **26**: 29, January, 1918.
6. Elwyn, *J. Am. M. Ass.*, **82**: 384, February, 1924.
7. Aikenhead, *Canad. M. Ass. J.*, **12**: 884, December, 1922.
8. Morrison, Personal communication.
9. Neuhoff and Aufses, *Ann. of Surg.*, **91**: 321, March, 1930.

Discussion

The President, Mr. R. E. Apperley (London) congratulated Dr. Aikenhead upon the magnitude of his figures. Referring to his own experiences, Mr. Apperley stated that in twenty-two years he had administered over 37,000 anæsthetics to all types of patients. He considered that the preliminary use of atropine had been largely responsible for the abolition of post-operative pneumonia, which nowadays was not so common as before. The routine practice in England was to give upwards of gr. 1/100 of atropine, according to the age of the patient. This reduced the incidence of post-operative complications. He found that nose and throat operations were singularly free from respiratory complications, and he held the view that the inhalation of septic material was not the sole cause of these difficulties. In pelvic cases he had observed almost as great freedom from post-operative respiratory complications. Those which did occur usually followed radical hysterectomy. Respiratory complications were noticed most frequently after operations upon the upper abdomen. In these cases respiratory movement was restricted and he considered that a factor. In conclusion, Dr. Apperley stated that there was no known routine method by which respiratory complications could be prevented; each case had to be considered individually.

Dr. F. J. G. La Flèche (Winnipeg) stated that lung complications should be regarded as "post-operative" rather than "post-anæsthetic". He considered the incidence of the condition to be dependent on many factors, especially the pre-operative condition of the patient, preliminary medication, the site and region of the operation, the type of anæsthesia, the reduction of vital capacity, and post-operative care. He considered that the most important factors in prophylaxis were the use of carbonic dioxide and oxygen, to prevent atelectasis, and frequent changes of the patient's position in bed.

Dr. H. W. Featherstone (Birmingham) stated that some years ago he analyzed forty different possible cases of post-operative respiratory complications and concluded that the most important factors in their production were shock and infection, especially in connection with operations upon the upper abdomen. His impression was that post-operative pneumonia is not so frequent as it was ten years ago. Possibly the condition was due to deficient nutrition consequent upon lung conditions.

Dr. David Lamb (Glasgow) said that some years ago he went through a series of post-mortem reports and found no case of pure pneumonia as a post-operative complication. This condition was invariably associated with sepsis. He considered there was great danger in operating upon patients with coryza, and he referred to the high incidence of abscess of the lung following tonsillectomy in America, as compared with its rarity in England.

Dr. S. Johnston (Toronto) recalled a case of tonsillectomy followed by lung abscess in which the same culture was obtained from both regions. In America tonsils were usually removed in the upright position, while the recumbent position was the rule in England.

XUM

DR. M. E. BOTSFORD (San Francisco) stressed the necessity of clearing up all throat infection before operating. She believed that gas and oxygen, given nasally, had largely reduced respiratory complications after tonsillectomy.

PROF. W. WEBSTER (Winnipeg) recommended the leaning forward position for tonsillectomy. Anæsthesia should not be deep enough to relax the soft palate, because in these circumstances blood and pus were inhaled. This frequently happened when tonsillectomy was performed under local anæsthesia.

DR. E. I. MEKESSON (Toledo, Ohio) considered that respiratory complications were predisposed to by many factors, the most important being the depth of anæsthesia. In tonsillectomy, the patient should be kept light; the airway should be free, because any obstruction tended to cause congestion of the lungs.

DR. J. A. BLEZARD (Edmonton, Alta.) said that he had a great regard for atropine and gave gr. 1/100 every four hours after operation as a prophylactic.

DR. HAYES (Christchurch, New Zealand) said he had never seen a post-operative lung abscess in New Zealand.

OBSERVATIONS ON THE TREATMENT OF CONGENITAL DISLOCATION OF THE HIP*

BY HERBERT P. H. GALLOWAY, M.D., C.M., F.A.C.S.

Orthopædic Surgeon, Winnipeg General Hospital,

Winnipeg

A DISCUSSION of the treatment of congenital dislocation of the hip naturally resolves itself into a consideration and comparison of manipulative methods and open operations. It is barely thirty years since this disability was generally recognized as having been emancipated from the list of affections regarded as incurable. Prior to that time, once the diagnosis had been made, and the nature of the condition explained to the parents of the child, or to the patient himself, if old enough, the surgeon dismissed the case feeling that all that was possible had been done. Then came the quickening of interest and kindling of hope which resulted from the work of Lorenz, followed by the universal adoption of his manipulative method, the inevitable evolution of various modifications and improvements, and the development of open operations to be applied in cases which resisted manipulation, until to-day it may be said of this recently hopeless disability that, given an early diagnosis, anatomical and functional cure should be the rule and failure the exception, while even old and neglected cases are by no means quite beyond help.

Manipulative reduction is undoubtedly still the method adopted by the majority of surgeons in treating young patients, and sometimes those who are older. The original technique of Lorenz is still largely used, although many prefer one of the various modifications, the Denucé method being probably the most popular among those who have mastered it. Although statistics of the results of manipulative treatment present such extraordinary variation as to be largely valueless, there seems to be abundant evidence that in the hands of experienced operators a large proportion of the cases in young children can be permanently cured by manipulative methods.

When Lorenz first made his triumphal tour of American clinics I had the privilege of seeing him carry out his method on several patients, and the demonstration was striking and convincing. Full of enthusiasm I returned home, and immediately applied my newly acquired knowledge in the case of a girl, aged 3, with dislocation of both hips; a perfect anatomical and functional cure resulted. Unfortunately, however, this encouraging initial success was followed by a series of failures and incomplete cures, with only an occasional really satisfactory result; and I soon came to feel that a most uncomfortable uncertainty dogged my efforts to treat this disability. Diligent inquiry among some of my orthopædic friends, and examination of cases treated by them, convinced me that their experience closely resembled my own.

My conversion to the open operation came in 1904, although for several years after that I employed it only occasionally and with misgiving born of inexperience. In June, 1904, the late Dr. Harry M. Sherman of San Francisco read a remarkable paper in which he advanced what seemed to me an unanswerable line of argument opposing manipulative reduction, and favouring arthrotomy as the routine treatment. I wish

*Made in opening a discussion in the Section of Orthopædics at the combined Meeting of the British and Canadian Medical Associations, Winnipeg, 1930.

to quote at some length from Dr. Sherman's paper:

"As regards the manipulative method, I am sure that Lorenz told the whole truth when he stated that the obstacle to reduction was the narrowed part of the capsule at the posterior and superior or superior part of the acetabular rim. If the opening at this narrowed part is big enough to permit the head to pass, reduction can be accomplished by manipulation, and may be maintained, if the acetabulum is deep enough. I have in two instances done this I know, but in the twenty-eight hips in which I have done arthrotomy and in which I have explored the narrow part of the capsule by my finger, and so know its size and the strength of its walls, there has been but one case in which the passing of the head would have been possible. I am not too dogmatic when I say that no possible force could have put the femoral head through the narrow part of the capsule in any of the other cases. One possibility and twenty-seven impossibilities! Now what happens when attempts are made to accomplish this impossibility? Lorenz has reported plenty of fractures of the femur and one each of pubes and of the ilium, and other operators have done the same. Lorenz reports seven cases of paralysis out of four hundred odd operations, but Taylor, looking carefully for the condition, finds eleven cases in less than fifty operations by various operators, including, I believe, Lorenz himself. My own contribution to the casualty list is the report of a case of Lorenz's own, of rupture of the capsule of the hip-joint distal to the constriction, and the thrusting of the femoral head out among the muscles of the thigh. While only one case was shown to have had this accident, still, from the similarity of the clinical conditions, I believe another had it, and it is not in the least impossible or improbable that it occurs in very many cases, especially in the class called 'anterior transposition'. Finally on all sides one finds the absurdity of the term 'bloodless' pointed out, and the reference to the lacerations of the muscles, the extravasations of blood and hæmatomas. And, last of all, Lorenz has reported one case of gangrene of the whole lower extremity. These accidents must make anyone, who is not an enthusiast or a special pleader, stop and think. One must say that to justify the exposure to such risks the percentage of successes, anatomic and functional, must be high, so that the benefit may, in the opinion of all, outrank the possible harm. What is the percentage of successes? From what we have seen of the Lorenz results scattered between Boston and San Francisco, we cannot believe that he ever really got good anatomic results in about half of all his cases."

Even if it be granted that Dr. Sherman presented an extreme view, and that his criticism of Lorenz's results was based in part upon the unwise application of the manipulative method to unsuitable cases, the essential fact brought out by him is that the entrance to the acetabulum is too constricted to permit the head to pass through it. I have personally verified this many times. But if Sherman's contention be true, how are we to account for the fact that so many undoubted cures are brought about by manipulative methods? In my opinion, in nearly all cases treated by manipulation the head does not at the time of apparent reduction fully enter the acetabulum, nothing intervening between the cartilage covering the head and the cartilaginous lining of the acetabulum. I believe that a wall of soft tissue is pushed before the head, and that this gradually disappears by pressure absorption during the prolonged retention in the abducted position which forms such an essential part of the after-treatment of these cases.

I have long felt that the objections to the open operation do not rest upon a sound foundation. The word "bloodless" so frequently applied to manipulative methods is captivating, but to anyone who has seen the enormous hæmatomas which so frequently attend the Lorenz method this term makes no very convincing appeal. Then it must not be forgotten that almost overnight the Lorenz method of treatment was eagerly and universally adopted by the profession as the solution of the problem of treating these hitherto incurable cases, and treatment by manipulation soon became an established tradition, with the result that comparatively few surgeons have gained any extended experience with the open operation. Again, we must remember that thirty years ago orthopædic surgery in general was much more the mechanical and manipulative department of surgery than it is to-day. Few indeed of the orthopædic specialists of that time were trained operators, and as the great majority of congenital dislocations came into the orthopædic department, manipulative reduction was practically the only method of treatment attempted. As I have said on other occasions, each worker in the field of the open operation for this condition has been more or less a pioneer, because the almost universal employment of manipulative methods has left the open operation largely without either teachers or students. Because manipulative methods produced results which were on the whole an enormous advance over the impotence of the era when these cases were classed as incurable, there developed too general a feeling that both patient and surgeon should be congratulated even if results were often far from ideal. At the present time, given hospital facilities of the highest type, a surgeon to whom absolute asepsis has become a confirmed automatic habit, and who has acquired the necessary experience with this particular operation, it should be almost as safe as a tenotomy, and as likely to result successfully as an osteoclasis for bow-legs or an osteotomy for knock-knee, provided that one other factor is present. That factor is that the patient must be from 20 to 36 months old, and must never have been previously treated by manipulation. It is at this point that I come into conflict with many if not most of those who perform the open operation in certain

XUM

cases. I believe the general teaching is that open operation should be held in reserve as a last resource where manipulative reduction has failed. I have always contended that such teaching is not merely wrong, but mischievous. The powerful grip with which traditional teaching holds the profession in regard to this particular surgical condition is well illustrated by a statement which occurred in a paper published in *The Lancet* about ten years ago by Mr. A. H. Tubby. He says:

> "No matter what the age of the patient may be, no resort is made to open operation until every effort has been made to reduce the dislocation by the manipulative method. In one instance, no fewer than eight such unsuccessful attempts were made. Portions of the adductors had been exsected, extension had been tried by heavy weights for several weeks, traction by pulleys up to the danger point had been used, and even when the trochanter major had been pulled down one inch below its normal position we found that flexion, hyperextension, abduction, circumduction inwards and outwards were all unsuccessful."

Such persistent unsuccessful efforts at manipulative reduction before resorting to open operation not only accomplish no good but do great harm, and bring the open operation into undeserved disrepute. Tissues which have been bruised and scarred and have had their power to resist infection lowered by the traumatism inseparable from such unwise manipulative efforts do not afford an inviting field for subsequent cutting operations, and cannot function as satisfactorily after the operation as tissues which have not been treated so unkindly.

In a young child the exposure of the hip by the Sprengel or Smith-Peterson approach is a simple procedure, and can be carried out rapidly and with little or no shock to the patient. Once the capsule has been opened and the constricted portion enlarged, reduction can be accomplished with almost no traumatism. Further, with the limb rotated inwards and maintained in moderate abduction of from 40 to 60 degrees, the head is so deeply buried in the acetabulum that with the most ordinary care there is no tendency to redislocation during the closure of the wound. When a plaster dressing has been properly put on, recurrence is practically impossible, no matter what position the patient is placed in. In my opinion, the actual traumatism is less, not more, in the average case, than when the manipulative method is employed.

Other things being equal, it must be granted that if a congenital dislocation can be reduced in a few minutes by an easy manipulative procedure which requires no elaborate surgical technique, it should be chosen in preference to an open operation which demands perfect asepsis, and which should never be attempted except by a highly trained surgeon. But are other things equal? Denucé teaches that his patients must not be allowed to begin walking until about one year has elapsed from the time reduction was effected, and he appears to regard as essential an elaborate course of after-treatment, extending over many months, and even as long as two and a half years. Contrasted with this, after the open operation in children, walking in the plaster is encouraged within a month, and the plaster is abandoned and no treatment considered necessary after five or six months. Indeed, I believe the plaster could be removed with safety and all further treatment dispensed with much earlier in most cases; but I have not felt justified in taking chances in order to discover the minimum safe period of after-treatment. It is highly undesirable to keep the pelvis of a growing child enclosed in plaster for a year if half that period will suffice. The extended period of after-treatment insisted upon by Denucé and others is not only an objection in itself, but I think it lends support to my belief that cure by any manipulative method can be brought about only by pressure absorption of capsular tissue which more or less completely blocks the entrance to the acetabulum. In other words, reduction by manipulation is usually at first incomplete, and it becomes stable only after the capsular tissue pushed before the head has disappeared. On one occasion I performed the following experiment. I reduced the hip by manipulation, and immediately took an x-ray picture. The head was opposite the acetabulum, but not deeply within it. I then performed an open operation and took another picture, which showed the head much more securely related to the socket.

It is granted that the open operation should never be attempted except by trained surgeons who can operate under conditions such that the failure of any link in the chain of asepsis is practically impossible; but if this be an objection, it applies equally to many other surgical procedures, and should not deter the surgeon who has learned to have confidence in himself and in the environment in which he operates.

The objection sometimes raised to undertaking early treatment, even by the manipulative method, is the difficulty of keeping the plaster from becoming soiled, but this is a less serious problem to ingenious and conscientious nurses

than to those who study to escape any avoidable trouble or exertion. At any rate, in my experience, it does not offset the greater ease with which reduction can be effected in younger patients. While I operate on children as young as 19 or 20 months, it may be stated that from 2 to 2½ years is, perhaps, the ideal age. In a general way, the operation becomes more difficult and uncertain as age advances, but there are exceptions to this rule. It may be anything but easy in a child aged 4 or 5. On the other hand, in the exceptional cases where the hip is lax and the head can be moved up and down on the ilium to a considerable extent, reduction may be quite easy in a patient aged 10 or 12. In children aged 3 years or younger who have never been subjected to manipulation the ligamentum teres is usually intact, and is an important guide in locating the acetabulum. In older children and in those who have been subjected to a previous manipulative effort the ligamentum teres may be absent, or, if found, detached from the head and curled up in the socket. Exceptionally I have found the ligament so voluminous as to occupy too much space in the acetabulum, interfering with the deep burying of the head which is so desirable, and, on this account, I have occasionally detached it and removed a large part of it. Sometimes even in the younger children the acetabulum is found so shallow, or its roof so sloping, as to jeopardize the result. When this condition is encountered, a wide chisel curved on the flat is driven almost horizontally into the ilium to the depth of about three-quarters of an inch, just above the upper rim of the acetabulum, and after prying down the roof of bone thus loosened, bone chips cut from the ilium are wedged into the gap created by the chisel. The same procedure has been adopted with complete success at a second operation in a few cases where the shallow condition of the acetabulum had permitted redislocation to occur.

Before dismissing the matter of treating congenital dislocation in young patients, reference should be made to a recent article by Dr. Charles H. Jaegar, of New York. He pleads for earlier diagnosis, and describes a new and simple plan of treatment which he claims can be used successfully in infants as young as 3 or 4 months. His article, which appeared in *Surgery, Gynæcology and Obstetrics*, April, 1930, is illustrated by some striking x-ray pictures of two cases, one set of pictures being those of a child of 7 months old when treatment was begun, while the other patient did not come under his care until the age of 2 years and 7 months. Jaegar argues that the shallow condition of the acetabulum is caused by pressure of the dislocated femoral head against its upper rim during the first months of life when growth and development are very active, and that this pressure prevents the normal development of the acetabulum. He states that removal of this pressure is promptly followed by development of the upper rim, and points to his x-ray pictures as proof. His plan of treatment is as follows: The child is placed in a long hip splint of rustless steel. This splint consists of two circular bands to fix the pelvis and chest, and two lateral bars to support the legs. The lower ends of the bars are furnished with a foot plate and leather anklet, the function of which is to maintain a mid-position of the leg as regards inward and outward rotation. The long outer bar is bent to fit the patient with the lower extremity abducted to 45 degrees. Gradual reduction is accomplished by an adjustable pad pressing downward and inward on the trochanter, this pad being controlled by a wing screw about one and a half inches long. In his first case the splint was worn for eight months. In the second and older patient it was discarded in a little over four months. He considers three months sufficient. Weight bearing is not permitted during the treatment, and he challenges the theory that functional weight bearing is necessary for deepening the acetabulum. He claims that x-ray pictures taken at frequent intervals show unmistakably that the upper rim of the acetabulum begins to develop rapidly as soon as the pressure of the head against it has been removed; and he suggests that the damage to the head seen so regularly in later years in cases treated by other methods may be due to the fact that the soft cartilaginous head is supposed to pound out a hollow in the harder socket.

TREATMENT OF OLDER PATIENTS

Granting that congenital dislocation of the hip is usually curable in young children, the problem of successful treatment in older patients remains a formidable one. Inasmuch as I never attempt manipulative reduction at any age, it is only natural that I should protest against attempts at manipulative reduction and plead for some form of open operation in all patients who have passed the early favourable period. To me it seems altogether unjustifiable to use the amount of force so often employed, and especially to subject the patient to repeated

XUM

attempts at reduction after the first efforts have failed.

Starting from this point, my discussion of the subject narrows down to a consideration of the kind of open operation to be chosen after the favourable early period has passed. In my opinion, actual reduction of the head into the acetabulum may be attempted by much the same method as I employ in children in any patient, irrespective of age, provided the case be one of those exceptional ones where the hip is lax and where the femur moves up and down until its upper limit is within a short distance, say one inch or less, of the roof of the acetabulum.

Preliminary traction, advocated by some writers, is practically valueless in my opinion, unless it be applied directly to the skeleton, and even then its advantage is doubtful. There is, however, a little-known method of using traction which I employ regularly in fractures of the femur, which may reasonably be expected to yield some result, if continued for several weeks. This method was originated by Michael Hoke, of Atlanta, Georgia, U.S.A. Into a short plaster spica, which surrounds the pelvis and upper part of the thigh on the injured side, are incorporated the side bars of what is practically a Thomas splint minus the ring. The thigh portion of the plaster is little more than a wide collar, and its upper edge must not come within a couple of inches of the perineum. The plaster is also carried down on the opposite extremity so as to include the foot, which is placed at right angles to the leg. In treating fractures of the femur in young children the usual adhesive strips may be used, but skeletal traction is preferable in older children and adults, and in applying this method to congenital dislocation, skeletal traction is indispensable. Calipers may be used, but my personal preference is for a pin passed through the femur just above the condyles. The degree of traction can be accurately controlled by a butterfly nut arranged on a screw. The plaster is applied over very abundant padding, so that it fits the patient's body and limbs loosely. As soon as traction is applied, it tends to push the whole plaster dressing up on the patient's body, but the plaster cannot move upwards owing to the inclusion of the opposite limb. Thus perfect resistance is provided and all counter-pressure comes against the broad sole of the foot, a surface which is not only adapted to pressure but accustomed to it, instead of being secured by the ring of a Thomas splint pressing against surfaces not so well adapted to pressure. The pin through the bone, if aseptically introduced, causes neither trouble nor pain. Whether we use or discard preliminary traction, there are other aids to the descent of the femur; division of the iliopsoas, and subcutaneous section of the adductors and of the iliotibial band, may also assist in getting the head near or opposite the acetabulum; it may then be "shoe-horned" into place.

In the cases where there is little movement of the head on the ilium, and the head is not within easy distance of the acetabulum, it will usually be better to abandon any attempt at actual reduction and adopt some method which will increase stability and improve function by giving support to the head when the patient places his weight on the dislocated limb. The effort actually to reduce the head into the deformed acetabulum in cases where it is riding high on the ilium requires so much force and is attended by so much traumatism—to say nothing of not being exempt from actual danger—and so often results in a hip which is largely or altogether stiff, sometimes with added flexion and adduction deformity, that functionally the patient may be little better or even worse off than before. The method of turning down a generous layer of bone from the ilium and wedging it in this position with bone chips cut from the crest of the ilium, so as to form a good roof over the head, is probably the simplest and safest compromise that can be devised.

A most ingenious operation has recently been proposed by Hey Groves. Briefly, this consists of reaming out a new acetabulum on the ilium, and then, after detaching the capsule from its pelvic attachment and sewing it over the head of the femur, implanting the head covered by the capsule into the newly formed socket. The outside of the capsule grows fast to the new socket, forming a most satisfactory lining; and as the interior of the capsule is furnished with synovial membrane this method creates a new articulation having all the elements of a stable and movable joint. This new operation has to stand the test of further experience, but it is one of those surgical procedures which appear to be sound and reasonable.

I have had no experience with the bifurcation operation described by Lorenz. It has always seemed to me wrong in principle; nevertheless, many surgeons have reported so favourably regarding the improved function brought about

by this procedure that it must be accepted as one solution of the problem of dealing with this deformity in adults. In these old neglected cases, anatomical cure is rarely if ever obtained, and any method which promises improved function and lessens disability must be welcomed. The Lorenz operation has the merit of great simplicity and relative freedom from risk, and in view of the good results reported by many surgeons, and the ease and safety with which it can be performed, it may come more and more generally into use.

The most difficult problem of all is furnished by the bilateral adult cases. Hey Groves has made an arresting suggestion in this connection. He says:

"The main reason which makes the bilateral case come for treatment is pain. This will be relieved, if one side can be reduced even though this side becomes almost ankylosed. But if one side is reduced and the other left, the patient will have legs of such an unequal length that she becomes more lame than ever. This difficulty may be overcome and the operation of reduction made much easier by the following device: The femur is exposed through an anterior incision, and cut through transversely just below the small trochanter. The upper end of the femur can then easily be brought down, and turned with the head into the new socket. After this has been done, the two ends of the femur will be overlapping by two or three inches. This overlapping part is cut off from the distal portion, and the divided femur united over a bone peg. When the patient has recovered from this operation, she will have the two legs of the same length, and, whether another operation is done or not, she will be quite freed from pain, because on one side the body weight will be transmitted directly on to the femur. In actual practice, the only patient for whom I have done this is now at full work as a factory hand, and has not thought it worth while to have her second hip operated upon."

If it be true, as Hey Groves says, that once the femur has been divided transversely just below the small trochanter the upper end of the femur can easily be brought down and turned with the head into the socket, why not employ this method even in unilateral cases? It would seem to dispose at once of the problem of getting the head low enough to effect reduction, and thus other means of overcoming the obstinate resistance to the descent of the head, such as preliminary traction and division of resisting soft parts, could be dispensed with. The objection that in unilateral cases there would still be inequality in the length of the limbs could be overcome by performing a second operation to shorten the limb on the unaffected side. To me it seems that the suggestion made by Hey Groves possibly puts the whole subject of dealing with the older cases on an entirely new basis.

REFERENCES

1. DAVIS, *Amer. J. Orth. Surg.*, February, 1904.
2. TAYLOR, *Ibid.*, February, 1904.

DISCUSSION

MR. E. LAMING EVANS, President, reported the results of manipulative treatment in a series of 25 patients with 32 dislocated hips, which had been treated not less than ten years previously. They had been examined within the last few weeks and the functional results reported were:—bad, 1; poor, 2; good, 13; perfect, 19. The good results included one anterior transposition and five eccentric nearthroses (maquial subluxation). The average shortening was less than half an inch, although in a series of 50 untreated congenital hip dislocation with the average age of patient 25, the average shortening was 2½ inches. Manipulation should always be very gentle and if the first attempt failed, two further attempts were made after intervals of seven to ten days. If reduction was still not accomplished capsulotomy was indicated.

DR. T. HARTLEY MARTIN (Leasowe) described the application of Putti's method in treating congenital dislocation of the hip in three cases under twelve months of age. In two cases reduction was effected in three months, and in the third case, which was that of a delicate, premature child, the dislocation was reduced in twelve months. The secret of success lay in early recognition and under such circumstances there was no necessity for operation.

MR. WATSON JONES (Liverpool) said that the strongest argument Dr. Galloway had brought forward was the freedom from trauma which his methods enjoy. But Putti had shown us that if a case could be diagnosed within a month or two of birth it could be completely cured by simple abduction of the hips. There was practically no manipulation and therefore no trauma at all. Between this type of case and the definitely irreducible hip of the adult there must be a certain proportion of cases reducible by manipulation *without trauma*. Manipulation treatment should be bloodless, and, provided that no force was used, a simple manipulation did not interfere with subsequent operative treatment.

MR. W. A. COCHRANE (Edinburgh) said that although operative treatment might be quite safe in the hands of the specialist we had to legislate also for the general surgeon and the practitioner. Furthermore, conservative measures have advanced coincidently with operative methods. The speaker preferred Denucé's manipulative method, because it was so gentle, and in the few cases in which operation was carried out, Kocher's posterior approach was utilized.

DR. GALLIE (Toronto) said that his practice had been strongly affected by a case he had seen in which operative reduction had been complicated by very severe infection of the wound and joint. He reported eighteen private patients suffering from congenital hip dislocation which had been treated by manipulation, and perfect functional results had been secured in all cases but one. He thought that, although operation was quite safe in the hands of Dr. Galloway, the average results in the hands of all practitioners were better under manipulation than under operation.

DR. HENDERSON (Mayo Clinic, Rochester) said that Dr. Galloway was pursuing the only fair course for a scientific investigation. Every case he saw was being treated by operations, so that a true interpretation of the results of operative treatment would be possible. In the speaker's own practice operative methods were only used when manipulative methods had failed, and in this group of cases the results were very poor.

DR. GALLOWAY, replying, said that the late changes in the head and neck of the femur and in the acetabulum which had been observed in some of Mr. Laming Evans' cases were due to decalcification and to poor resistance owing to long functional disuse during treatment. The speakers in the discussion had shown him that the surgeons who were practising manipulative methods to-day had made wide departures from the original methods of Lorenz, and for these reasons the objections to manipulation methods lost a good deal of their force. The whole problem became one of early diagnosis, and considerable onus lay on the obstetrician who examined newly born infants with a view to detecting congenital defects.

XUM

SYPHILIS OF THE AORTA AND HEART*

A CLINICAL STUDY

BY SAMUEL S. RIVEN, M.D.,

Ann Arbor, Mich.,

and

J. FEIGENBAUM, M.D.,

Montreal

THIS article presents a summary of the clinical findings in a series of 74 patients with syphilitic cardiovascular disease observed at the University Hospital, Ann Arbor, between July, 1925 and July, 1927. Seven of these patients were subjected to autopsy. In the remaining instances the diagnosis was made on the history, and the clinical and laboratory findings. No doubtful cases were included. The clinical diagnoses are summarized in Table I. There is an extensive literature dealing with this subject. Among the more important studies are those of Longcope[1], Allbutt[2,3], and Reid[4,5]. We have compared our data with the findings of these and various other authors.

TABLE I.

Clinical Diagnosis	*No. of Cases*	*Per Cent*
Aortic insufficiency without aneurysm	35	47
Syphilitic aortitis without aneurysm or aortic insufficiency	14	19
Aneurysm	13	18
Aneurysm and aortic insufficiency	9	11
Syphilitic myocarditis	3	4
	74	100

ETIOLOGICAL CONSIDERATIONS

Relationship of sex to the incidence of cardiovascular syphilis.—Of the total number of patients, 64 were males and 10 were females, an incidence of 6.4 to 1 in favour of males. In cases on which autopsy was performed Reid[4] found a ratio of 3 to 1; Scott[6] 6 to 1, and Clawson and Bell[7] 4.7 to 1; while in clinical cases Reid found a ratio of 11 to 1 (out patients), and Paullin[8] 4 to 1. One might expect to find a greater preponderance of males in autopsied than in clinical cases, for according to Warthin[9] "Syphilitic lesions in the aorta and heart of the male can be demonstrated microscopically in practically 100 per cent of the cases . . . . Very different is the case in the syphilitic female. In a large proportion of such, no characteristic gross or microscopic syphilitic lesions can be found in either aorta or heart."

Racial incidence.—Sixty-four of the patients here reported belonged to the white race and 10 to the coloured race. The proportion in Scott's series between white and coloured individuals was 34 to 41. Paullin found evidence of cardiovascular syphilis in 39 per cent of 662 negroes who had syphilis. This percentage is apparently not any greater than occurs in the white population with syphilis. No definite conclusion can be drawn regarding the predisposition of negroes to syphilis of the circulatory apparatus, because the figures from various parts of the country vary with the proportion of negroes in the total population.

Age incidence.—The relationship of cardiovascular syphilis to age is given in Table II.

TABLE II.

Ages	*No. of Cases*		*Per Cent*	
	Authors' Series	*Longcope's Series*	*Authors' Series*	*Longcope's Series*
20-30	0	19	0	30.1
31-40	7	13	9	20.6
41-50	33	19	45	30.1
51-60	23	7	31	11.1
61-	11	5	15	8.0
	74	63	100	99.9

By far the largest number of our cases fell into the fifth and sixth decades, while the majority of Longcope's cases were found in the third and fifth decades, with an equal number in each of these age groups. A comparison of the two series reveals a rather striking difference in the third, fifth, and sixth decades, with the greatest discrepancy in the third. As will be noted, almost one-third of Longcope's patients were

*From the Department of Internal Medicine, University Hospital, University of Michigan, Ann Arbor, Michigan.

between 20 and 70 years of age, while none of our patients fell within that age period. Also, while one-half of Longcope's patients were between 20 and 40 years old we found a much smaller percentage in this group. In fact, 67 per cent of the patients were between 40 and 55 years old. The average age of all patients was 50 years, with extremes of 32 and 74 years.

Most authors place the commonest age incidence of syphilitic heart disease between 40 and 50 years. Reid gives the average age as 44 years, with age limits between 21 and 73 years. Allbutt[2] gives the age period of greatest incidence as 35 to 50. Benary (quoted by Allbutt in the above reference) gives the average age as 48.6 years. Brooks[11] in a study of 200 cases found the average age in women to be 38 years, and in men 44 years. Scott sets the average age at about 40 years, with limits of 29 and 76 years. The mean of Coombs'[10] cases was only 35 years. In 80 per cent of Paullin's patients, the disease was seen before the fiftieth year. This author points to the fact that syphilitic aortitis can occur in adolescence, one of his patients being 17 years old and another 22 years old.

SYMPTOMS

The interval between primary syphilitic infection and onset of symptoms.—This information was available in only 39 of the cases. The shortest lapse of time between the infection and the development of symptoms was 6 years, the longest 49 years; the average interval was 24 years. An interval of 6 to 20 years elapsed between the primary infection and clinical disease in one-third of the cases and a period of 21 to 30 years in half of the cases. So that in five-sixths of the 39 cases, symptoms appeared between 6 and 30 years following the infection. From his studies, Longcope concluded that the average interval between infection and the occurrence of symptoms was 16 years, the limits being 3 and 35 years. Coombs found this lapse of time to be about 20 years. Scott observed the interval between infection and death in 34 male patients to range from 5 to 44 years, the average being 20 years. It is worthy of note here that many authors have reported syphilitic infection of the heart and aorta during the secondary stage. Valda (quoted by Allbutt) reported a case of infection of the mediastinal glands while the chancre was still present.

Presenting symptom.—By "presenting symptom" we mean the patient's chief or most troublesome complaint, or the symptom which urged him to seek medical advice. Although it was difficult to be certain of the presenting symptom in every instance, it was obtainable in the majority of patients. The most frequent was dyspnœa on exertion, in 44 patients, or 59 per cent of the total number. Next in order of frequency was pain in the chest, arms or abdomen, in 19 patients, or 25 per cent. Palpitation was the chief complaint in 2 patients; "swelling of the ankles" in 2 instances, and "nervousness" in 2 others. Of the 3 remaining patients, one presented as his chief difficulty "painful heels", another dizziness, and the third hoarseness. It will be seen that 84 per cent of the patients with syphilitic cardiovascular disease had as their presenting symptom either dyspnœa on exertion or pain. The duration of the chief complaint varied between 2 weeks and 16 years. In about three-quarters of the cases, however, the chief complaint had been present between 2 weeks and 2 years before the patient came to the hospital.

Dyspnœa.—Dyspnœa on exertion as a feature at some time during the patient's illness, and not necessarily as a presenting symptom, occurred in 67 patients or 90 per cent. Longcope found dyspnœa to be one of the first symptoms in about one-half of his cases, and Reid found it in two-thirds of his series.

Paroxysmal dyspnœa.—Paroxysmal dyspnœa appeared in 13, or 17 per cent, of our cases, and in 9, or 14 per cent, of Longcope's patients. In Scott's experience, only few cases of syphilitic aortitis without aortic insufficiency presented typical paroxysmal nocturnal dyspnœa. Keefer and Resnik[12] also found this symptom to be very common in aortitis with aortic insufficiency; of their 28 patients 25, or 89 per cent, had paroxysmal dyspnœa. In another series of 24 patients with uncomplicated syphilitic aortitis, collected by Keefer and Resnik, not one complained of paroxysms of dyspnœa. So far as the high incidence of paroxysmal dyspnœa in cases with aortic insufficiency is concerned our experience has been different from that of the last mentioned authors. Only 9 of our 42 patients with aortic insufficiency had paroxysmal dyspnœa. Moreover, of the total number of 13 cases with paroxysms of dyspnœa, 4 had aortitis without aortic insufficiency.

Longcope, who was one of the first of American authors to call attention to the occurrence of paroxysmal dyspnœa in syphilitic aortitis,

XUM

attributed the attacks of shortness of breath to reflex stimuli from the root of the aorta. Allbutt's explanation of this phenomenon is that it is due to an irritation of the recurrent laryngeal nerve with consequent laryngeal spasm. Keefer and Resnik offered no explanation of the paroxysms of dyspnœa, but maintained that they occurred generally in patients with very large hearts. Twelve of our 13 patients with attacks of dyspnœa had huge hearts, while the 13th had an aneurysm with a heart of normal size. Whatever the mechanism of the production of paroxysmal dyspnœa may be, we are justified in concluding that paroxysmal dyspnœa in syphilitic cardiovascular disease is usually associated with marked cardiac enlargement.

Pain.—Pain was a symptom in 37, or in 50 per cent, of our patients. In 31 of these it was located over the precordium; in 3 it was substernal; in 2 it was epigastric; and in 1 it was right thoracic. Longcope found pain as an important symptom in 29 of his 63 patients, or 46 per cent. In Brooks' series of 200 patients, pain was complained of by 119, or 59 per cent. While most of our patients described their pain as being in the precordium, Reid has found it generally spoken of as "substernal". Typical angina pectoris occurred in 5 of our cases (6 per cent) and in 18 of Brooks' patients (9 per cent). Although pain in syphilitic heart disease is usually attributed to a narrowing of the mouths of the coronary arteries, this is far from being a settled question. Allbutt[2] has stated quite emphatically that the closure of the coronaries is not the cause of the pain in syphilitic aortitis. Horder[13] is convinced that pain is by far the most important symptom of syphilitic aortitis. Practically all the authors whose opinion we have consulted on this subject express the same conclusion. Pain is, perhaps, the most characteristic symptom of syphilitic aortitis, but its importance in diagnosis should not be over-emphasized, because it may be absent in about half the cases.

Other symptoms.—Palpitation of the heart was met with in 61 per cent of the cases, and puffiness or swelling of the ankles in 35 per cent. Neither of these symptoms is, of course, significant in the diagnosis of syphilitic cardiovascular disease.

FINDINGS ON PHYSICAL EXAMINATION

Enlargement of the heart.—The teleoroentgenogram, or physical examination, showed definite cardiac enlargement in 61, or 83 per cent, of our patients. In the recent literature we were unable to find any definite data regarding the relative frequency of cardiac enlargement in syphilitic heart disease, as determined by clinical means. However, reference is made to the weight of the heart in certain pathological studies on cardiovascular syphilis. Scott and Saphir[14] state that the majority of hearts with syphilitic aortic insufficiency weighed about 500 grams, and Clawson and Bell give the average size of the heart in syphilitic aortitis as 620 grams for men and 400 grams for women. It seems apparent, then, that increase in the size of the heart as determined by the ordinary examination is a fairly constant, though not characteristic, clinical sign in syphilitic heart disease.

Diastolic murmur at the base.—The characteristic murmur of aortic insufficiency at the second right costal cartilage or along the left border of the sternum was heard in 42, or 56 per cent, of the cases. In 35 of the cases with an aortic diastolic murmur enlargement of the heart was found both by physical and Roentgen-ray examination. Clawson and Bell, with their autopsy material, have called attention to the fact that cardiac enlargement is almost always associated with aortic insufficiency, and, as already stated, Scott and Saphir made the same observation. Our clinical data support these findings.

Reference to the presence or absence of a collapsing pulse was made in 60 of the case records reviewed. Corrigan's "water-hammer" pulse was observed in 23. The average pulse pressure in this series was 97 mm. of mercury, which bears out the well known clinical fact that a collapsing pulse is frequently associated with a high pulse pressure. While a Corrigan pulse is emphasized in the diagnosis of aortic insufficiency, it is noteworthy that only in a little over one-half of these was a Corrigan pulse present.

Modified aortic second sound.—A changed aortic second sound was found by itself or in association with a diastolic murmur at the base in 40 patients (54 per cent). Ever since Allbutt called attention to the altered character of the aortic second sound, most clinicians have confirmed this observation. The second sound has been variously described as "accentuated", "ringing", "hollow", or "metallic" in quality. Hoover[15] believed that the diagnosis of early syphilitic aortitis was possible by physical signs alone in the majority of instances. This author pointed out that many of the early physical signs of

aortitis are the result of a lengthening of the ascending arch with some tortuosity, so that the arch approaches the surface of the chest more closely than it does normally. He thus explained the accentuated second sound and the systolic thrust at the right of the sternum. A modified aortic second sound does not always indicate syphilitic aortitis, as hypertension and arteriosclerotic changes of the aorta must also be considered.

Murmurs at the apex.—A systolic murmur was audible at the apex in 30 patients. This was usually described as being soft and high pitched. In 17 patients a diastolic murmur was heard at the apex; in 14 of these it was soft and blowing, and in 3 it was rumbling in quality. There was no reason to suspect mitral stenosis of rheumatic origin in the last three patients. Warthin[16] has never seen syphilis attack the mitral valve. Thus, in a little less than one quarter of the total number, and in more than one-third of the cases with an aortic diastolic murmur, an apical diastolic murmur was present. Thayer is quoted by Osler and McCrae[17] as stating that an apical diastolic murmur occurs in half the cases with uncomplicated aortic insufficiency.

The blood pressure.—In 18, or nearly one-quarter of the patients, the pulse pressure was more than 100 mm. of mercury; in 25, or one-third of the cases, it was above 90; and in 34 patients, or almost one-half, it was over 80 mm. In those patients who had a pulse pressure of 80 mm., 32 of 34 had the diastolic murmur of aortic insufficiency. There apparently are no characteristic blood pressure changes in syphilitic aortitis except when aortic insufficiency is present. This observation conforms with the opinion of most authors on this subject.

SYPHILIS OF THE AORTA AND CENTRAL NERVOUS SYSTEM

The frequent association of syphilis of the central nervous system and syphilitic aortitis has been known for a long time, and was first mentioned by Berger and Rosenback in 1879 (quoted by Allbutt). In many cases of syphilitic aortitis, central nervous system symptoms are the only clinical evidence of syphilis.

There was clear evidence of syphilis of the central nervous system in only 10 per cent of our patients. Allbutt cites Goldscheider, who found 39 cases of tabes in 136 cases of syphilis of the aorta. The rather low percentage of cases of central nervous system involvement in our series is due to the fact that in a number of suspected cases examination of the spinal fluid was not made.

TABLE III.

	Number of Cases
Spinal fluid Wassermann reaction positive	8
Spinal fluid Wassermann reaction negative, with definite signs of central nervous system syphilis	4
Spinal fluid Wassermann reaction not obtained, with definite signs of central nervous system syphilis	8
Total number of cases with suspected central nervous system syphilis	20

LABORATORY STUDIES IN SYPHILITIC HEART DISEASE

The Roentgenogram.—In 1913 Longcope called attention to the dilatation of the great vessels in syphilitic aortitis. He noted that the dilatation may take the form on the x-ray film of a cone with its apex pointing towards or away from the heart, and also that early cases may show nothing more than a slightly bulging shadow to the right of the vertebral column in the region of the ascending aorta. Longcope further maintained that with the extension of the syphilitic process to the transverse and descending segments of the aorta, the aortic knob disappears. Hickey[18] has described a new sign frequently seen in aortic syphilis. There occurs, on the lateral roentgenogram of the chest, an angulation at the junction of the ascending and transverse parts of the aorta, which is the result of a lengthening of this vessel. There is also an increased visibility of the aortic arch in the lateral projection. One of the most important fluoroscopic signs is expansile pulsation of the enlarged aorta, which is the earliest sign of aneurysm. There is nothing specially characteristic of the syphilitic heart itself on the Roentgen-ray film.

The Wassermann reaction.—The complement fixation test was positive in 66, or 89 per cent, of our patients; doubtful in 2, or 2 per cent; and negative in 7, or 9 per cent.

TABLE IV.

Relationship between cardio-vascular syphilis and a positive blood Wassermann test:

Author	*Percentage with positive reactions*
Reid[9]	83
Eicke[3]	81
Scott[11]	80
Citron[4]	60
Authors	91

If doubtful Wassermann reactions may be considered significant, then as will be seen by reference to Table IV., 91 per cent of these patients had a positive complement fixation test.

XUM

This is in accord with most of the statistical studies heretofore recorded. Complement fixation depends upon the persistence of immune bodies in the serum, whereas syphilis of the heart and aorta may be present after these bodies have disappeared. Hence the Wassermann reaction should not be the last resort in diagnosis, and, as has been pointed out by others, a diagnosis of cardiovascular syphilis can safely be made in the absence of a positive Wassermann reaction if the clinical picture suggests the disease.

The electrocardiogram.—In this series 67 of the patients had had electrocardiograms. Eighteen of these were normal, while the remainder showed abnormalities of various kinds. The most common finding observed was left ventricular preponderance, which occurred in almost 40 per cent of the patients. The other variations were of the type which one might see in any other group of cardiac patients, so that the electrocardiogram in itself offered no clue to the diagnosis. The deviations from the normal which influence prognosis were, of course, as useful with syphilis of the cardiovascular system as with any other type of cardiac disease.

SUMMARY

Seventy-four cases of cardiovascular syphilis form the basis of this report. The ratio between males and females was 6.4 to 1. Sixty-four of the patients were white and 10 were coloured. The average age of all cases was 50 years, with extremes between 32 and 74 years. About two-thirds of the cases occurred between 40 and 55 years. The average interval between the primary syphilitic infection and the onset of symptoms was 24 years. The most frequent presenting symptom was dyspnœa on exertion. Paroxysmal dyspnœa is much more commonly associated with marked cardiac enlargement than with aortic insufficiency. Pain was absent in one-half of the cases. An increase in the size of the heart, demonstrated by physical and Roentgen-ray examination, is a fairly constant clinical sign in syphilitic heart disease. Cardiac enlargement in syphilitic heart disease is almost always associated with aortic insufficiency. A changed aortic second sound was found by itself or in association with a diastolic murmur at the base in 40 cases. In half the patients the pulse pressure was over 80 mm. of mercury. There are apparently no characteristic blood pressure changes in syphilitic aortitis except when aortic insufficiency is present. In 10 per cent of the cases there was syphilis of the central nervous system. The blood Wassermann reaction was positive in 91 per cent of the cases.

Our thanks are due to Dr. Frank N. Wilson for his encouragement and invaluable suggestions in this study.

REFERENCES

1. LONGCOPE, *Arch. of Int. Med.*, **2**: 15, June, 1913.
2. ALLBUTT, Diseases of the Arteries including Angina Pectoris, **2**: 167, Macmillan & Co., London, 1915.
3. ALLBUTT, *Brit. M. J.*, **1**: 177, August 6, 1921.
4. REID, *Boston Med. and Surg. J.*, **183**: 67, July 15, 1920.
5. REID, *Boston Med. and Surg. J.*, **183**: 105, July 22, 1920.
6. SCOTT, *Ann. of Int. Med.*, **5**: 1028, May, 1921.
7. CLAWSON AND BELL, *Arch. of Path.*, **4**: 922, December, 1927.
8. PAULLIN, *Trans. of the Ass. of Am. Phys.*, **42**: 217, 1927.
9. WARTHIN, *Am. J. Obs. and Gyn.*, **15**: 595, May, 1928.
10. COOMBS, *Bristol Med. Chir. J.*, **43**: 1, 1926.
11. BROOKS, *Am. J. of Syphilis*, **5**: 217, April, 1921.
12. KEEFER AND RESNIK, *Arch. Int. Med.*, **37**: 264, February, 1926.
13. HORDER, *The Lancet*, **210**: 695, April, 1926.
14. SCOTT AND SAPHIR, *Trans. of the Ass. of Am. Phys.*, **42**: 36, 1927.
15. HOOVER, *J. Am. M. Ass.*, **74**: 226, January, 1920.
16. WARTHIN, *Am. J. of Syphilis*, **2**: 425, July, 1918.
17. OSLER AND MCRAE, Aortic Insufficiency. Principles and Practice of Medicine, D. Appleton & Co., New York, p. 826, 1925.
18. HICKEY, Personal communication.

THE SEROLOGICAL DIAGNOSIS OF UNDULANT FEVER.—H. Meisel in Poland has examined the serum from 687 patients for agglutinins to *Br. abortus;* the serums were sent to the laboratory for a Widal or a Weil-Felix test, The serums from two patients, each of whom was suffering clinically from undulant fever, agglutinated Bang's bacillus to a titre of 1 in 800 or 1 in 1000. Neither of these serums had any agglutinating action on the typhoid or paratyphoid A and B bacilli, or on *B. proteus* X 19. On the other hand, among 167 serums agglutinating one or other members of the enteric group, there were five which at the same time agglutinated *Br. abortus* to a titre of 1 in 50 or 1 in 100; and among 186 serums agglutinating *Proteus* X 19 there were 11 which agglutinated *Br.* abortus to a titre of 1 in 50, 1 in 100, or 1 in 300. According to Kristensen a titre of 1 in 100 to Bang's bacillus is diagnostic of infection with this organism; but the author maintains that this criterion is liable to lead to errors of diagnosis. To ascertain whether the positive results with Bang's bacillus obtained with the serums of certain enteric and typhus patients were due to coagglutination the author tested serums, prepared by inoculating animals with typhoid or paratyphoid bacilli or with *Proteus* X 19, against *Br. abortus;* no agglutination occurred. He therefore concludes that these results are not explicable on the basis of coagglutination, but indicate rather that the patients have at some previous time suffered from undulant fever.—*C. R. Soc. de Biologie*, p. 534, June 6, 1930.

THE THYMUS*

BY A. STANLEY KIRKLAND, M.D.,
Radiologist, General Public Hospital,
Saint John, N.B.
President New Brunswick Medical Society

CHILDREN with thymic symptoms may be divided into three age groups: (1) those who have difficulty in the first few hours of life; (2) those whose difficulty appears in the early weeks of life; (3) those whose persistently enlarged or hyperfunctioning thymus endangers their lives during the years up to puberty or even later. I believe that the first group includes many of the stillborn children and those others whose respiratory function is only initiated with extreme difficulty. In my small group of treated cases there were several who breathed with difficulty from the first, in whom cyanosis was a conspicuous and persistent symptom, and in all but one of these an enlargement of the thymus was evident; this one exception reacted quickly to x-ray therapy. The chests of these babies who have thymic disturbances at birth show very frequently, besides the increase in the shadow of the gland, a very definite atelectasis. W. A. Evans[1] has stated that, "In all cases of unilateral atelectasis the lobe of the thymus on the affected side showed the greater enlargement," and concluded that "this might be a factor in the failure of the lung to be properly aerated." In our cases this finding was confirmed. These babies, treated at once by x-ray, do extremely well.

The second group provides the combination of symptoms which are classically described in all discussions of the thymus, but even here there are variations. A mild or moderate degree of cyanosis, associated with difficulty in nursing, is frequently the only indication evident to the careful observer. Convulsions are a common feature. These seizures run the scale from faint twitchings of the facial muscles and fingers to attacks of a most alarming nature. During the convulsion the cyanosis and dyspnœa increase and the inspiratory stridor or crow will often be noted. The parents will say that the baby loses or holds its breath, and this phenomenon is sometimes ascribed to bad temper. The cry of the child with thymus enlargement is characteristic, but difficult to describe. It is brassy, mechanical, and often terrifying. During a convulsion we have found, in several cases, a transient elevation of temperature, rising to 105.3° in one case and rapidly falling to normal when the child became quiet. Opposed to this syndrome, the thymic child in an acute attack may show a death-like pallor with absolute flaccidity. I am undecided as to which appearance is the most alarming. A case exemplifying the pallid type was brought to me last winter by an optimistic physician in the middle of the night. This child was eighteen months of age. She was unconscious, cold, clammy, respiration four a minute. Stridor was well marked. A rapid fluoroscopic examination showed a moderately enlarged thymus shadow. An immediate x-ray treatment over the anterior chest surface was given. Twice during the following few minutes the breathing ceased. Artificial respiration and brandy finally restored regular breathing. In four hours the child was definitely better and following two further radiations at seven-days' intervals, there has been no recurrence of symptoms. This case indicates the rapidity with which thymic conditions can be influenced by x-ray therapy.

The third age group carries only a degree of potential danger. These little ones have a persistently enlarged thymus and their risk consists in the possibility that they may require anæsthesia or surgical treatment. It is this type of child who may die suddenly during primary anæsthesia or succumb unaccountably to an apparently trifling infection.

Description of the thymus first appeared in the middle of the seventeenth century when Vesalius and Bartholinus described it. Since then it has continuously been the subject of speculation, controversy and theorizing. Friedleben in his celebrated monograph concluded that "the thymus is not essential to life but the thymus

*Read at the Annual Meeting of the Ontario Medical Association, Toronto, May, 1930.

XUM

and spleen together are essential;" that "the death which follows the removal of these organs is one of wasting brought about by the failure in the positive blood formation caused by the cessation of their combined activities." Much research work has failed to prove that the thymus is the source of any internal secretion, but it is known that a substance contained in the thymus, when injected, causes convulsions.

Most observers are agreed that it is impossible to arrive at any conclusion as to the normal size, shape or weight of the gland. Very exhaustive studies have been undertaken by several anatomists, pædiatrists and roentgenologists, but their efforts have done little to give us a picture of what a normal thymus should be.

The frequency with which enlargement of the thymus occurs is also a matter of much debate. Liss[2] found 42 per cent of infants with large thymic shadows. This figure is, perhaps, high. It has been found that in large pædiatric clinics in Boston and New York, where the chests of several thousand children, admitted consecutively, were x-rayed previous to surgical procedures, the percentage of large thymus shadows varied from 1.6 to 7.5 per cent.

However, the size of the gland shadow is not of the chief importance. Thymic hyperfunction or dysfunction is the condition with which we are concerned. Possibly too much stress has been laid on the enlargement of the thymus as shown by the x-ray. It may be granted that the gland sometimes produces symptoms mechanically by pressing on the very important venous and arterial structures with which it is in contact. Again, this pressure may be exerted on the trachea itself, as was pointed out by Pancoast. This is more easily understood when it is remembered that in front the gland is in contact with the rigid sternum. Nevertheless, many times the x-ray fails to show any thymic shadow in children exhibiting typical thymus asthma who react well to x-ray radiation. Again, in others where a large shadow is found, x-ray radiation will relieve symptoms with little or no change in the size of the shadow. Such observations suggest rather strongly that the explanation of symptoms as being due to mechanical obstruction alone is not entirely conclusive. It is argued, therefore, that thymic hyperfunction as a clinical entity is theoretically established until further research shall indicate more clearly the function of the thymus and its inter-relationship with the better understood body processes. This stand may be challenged as empirical, but it is remarkable that many empirical methods of treatment have been fully justified by subsequent investigations, for empiricism, founded on sound and proved observations, has at the worst the virtue of practicality.

Status lymphaticus is the term describing the condition of persons with an unstable thymus function. This instability is found more frequently than is commonly supposed. Statistics supplied by Bellevue Hospital show that in 5,652 autopsies, 457, or eight per cent showed positive evidence of this abnormality. It is stated that the condition is six times more common in males than in females. This unexplained disparity in the sexes may be due to the added difficulty of recognition in the female. Douglas Symmers writes that in typical status lymphaticus the faucial, lingual, and pharyngeal tonsils, the Peyer's patches, the solitary follicles and Malpighian bodies of the spleen are hyperplastic in various combinations. The superficial and regional lymph nodes, on the other hand, are rarely enlarged and are negligible from the standpoint of diagnosis. Another feature in the anatomical picture of status lymphaticus is the hypoplasia of the aorta and blood vessels of the brain.

Status lymphaticus is frequently found in cases of emotional instability. Again to quote data supplied by the pathological department of Bellevue: It is there a matter of almost daily observation that suicides, gunmen, and degenerates, who have met death by violence, present the characteristic conformation and anatomical changes of status lymphaticus. According to the combined figures of Bartels and Miloslavich, in 232 cases of suicide 80.5 per cent showed the signs of status lymphaticus at autopsy. The condition is common in neurasthenics, epileptics, and the insane. It is then scarcely conceivable that status lymphaticus, occurring so often among such a diversity of individuals of unstable emotional qualities, could be accidental. Conversely, it is an interesting theory that this emotional unbalance may be due to thymus dysfunction.

The clinician is interested first with the appearance of the patient with status lymphaticus. The elder Gross has portrayed the so-called "angelic child" as well nourished, beautifully proportioned, with velvety skin and silky hair, with shapely arching limbs and narrow waist, and unusually susceptible to infection. These

characteristics are usually carried forward as the age increases with the additional feature that males of this class tend toward the feminine in such matters as the distribution of body fat and body hair. They also show poor development of the genitalia.

DIAGNOSIS

The clinical diagnosis of thymic trouble in the child in the first year of life is sometimes extremely easy, if the observer is accustomed to evaluating the more common findings. Thus it has been my experience that once a physician has seen a case demonstrated he is seldom in doubt when another presents itself. With the diagnosis comparatively simple and the results of treatment so happy, it seems to me justifiable to be monotonously repetitious until such time as every one of us has the picture clear in his mind.

Given a child in the first months of life who has difficulty in feeding, associated with some cyanosis and dyspnœa, who chokes when it cries and may show the crow or inspiratory stridor previously described, or in extreme cases may have convulsions without obvious cause, one should at once think of the probability of a persistent thymus. The x-ray examination of such a child will in the very great majority of cases show an enlarged upper mediastinal shadow. What is to be taken as the normal in these cases? I feel with many others that any shadow appreciably wider than that cast by the vertebral column should be considered abnormal and certainly any asymmetrical shadow extending over a portion of either lung-field is a matter for serious consideration. The outline of these shadows is multiform and of little significance. The size of the shadow, once it is definitely established that it is beyond normal limits, is not of the first importance, because it is a common experience that a child with a huge shadow in its chest skiagraph may show few symptoms, whereas a thymus which is barely demonstrable by x-ray may produce most alarming conditions. Again, it has been shown that a large thymus, giving symptoms, after being radiated until the child was symptom-free may show no diminution in size. Therefore, we must remember that the x-ray demonstration of a large thymus shadow is only part of the picture, the most important part of which is the thymic dysfunction. The size and shape of the thymus is rapidly changed, according to Noback, by the pressure exerted upon its lateral surfaces by the expanding lungs of the infant.

One very important observation in the x-ray examination is that the shadow of the thymus increases in size when the baby cries, due, no doubt, to the increased pressure exerted by the diaphragm. Occasionally, the only evidence of persistence of the thymus is obtained by utilizing the fluoroscope and observing the mediastinum in the oblique position. This has an added significance when it is known that very many thymus glands are of the elongated or pedicle type. One-quarter of all cases fall in this class, according to Mulford K. Fisher[3].

In my group of cases one child showed no enlargement. The remainder all showed a definite increase. All the enlarged shadows were asymmetrical—in 3 the left lobe was the larger; in 21 the right lobe composed the bulk of the gland. In five cases of right-sided enlargement there was definite atelectasis in the corresponding lung. One of these five showed bilateral partial lack of aeration of the lung. When confronted with an abnormally large mediastinal shadow in an infant it is not safe to jump immediately to the conclusion that one is dealing with an enlargement of the thymus. It is sometimes difficult to decide if one has not perhaps to deal with a mass of tuberculous mediastinal glands or a congenital enlargement of the heart. Another point in differential diagnosis is that not infrequently an enlargement of the thymus will give a chain of symptoms very closely simulating hypertrophic stenosis of the pylorus. It was my good fortune to recognize such a condition recently in a child referred to me for x-ray study to determine the cause of vomiting. I have since found that Lewald had previously mentioned this difficulty in diagnosis.

TREATMENT

The child with an abnormal thymus should receive x-ray therapy as soon as the condition is recognized. In the greater number of cases there is no need to urge this type of treatment, once the diagnosis is made, for many of the children are so ill that the parents are in a state of terror and it is fortunate for all concerned that the results are, on the whole, spectacular. Roentgen-therapy has changed what was an extremely fatal condition to one rarely fatal.

There is some difference of opinion as to the relative value of x-ray and radium, both as to therapeutic effect and to ease of application. It

XUM

was stated that a sufficient dosage of radium could be more easily applied to the chest of an infant than would be the case with x-ray. However, we have had no very real difficulty because a towel and a few safety pins will satisfactorily restrain a young child, and parents, by holding an older child's hands extended over its head, solve our difficulty with ease. X-ray is available in many circumstances where radium is out of the question. The cost is less and the results are as good, if not better. Much has been written about the necessity of protection over the thyroid and parathyroids when x-ray radiation is applied to the thymus. This is easily arranged by covering the neck with lead rubber, or by using a cone, but I do not see the necessity for this protection: first, because the amount of x-ray given is so small, and, secondly, because in the x-ray therapy of tuberculous adenitis and other cervical conditions, I have never seen any untoward results due to action on the thyroid or parathyroids, and in these cases the dosage is immeasurably greater.

X-ray treatment should be continued until the symptoms are relieved and then immediately stopped. It used to be our practice to provide three treatments over the upper sternum at weekly intervals; latterly our patients have rarely received more than one or two exposures, chiefly because it has been found that symptoms begin to improve not later than ten days after the first treatment and in the case, previously referred to, the improvement was definitely observed in a few hours. Again, the necessary number of treatments has been reduced because our clinicians find that by giving the child calcium chloride in small doses the effect of x-ray is increased or at least aided. This is a result particularly satisfactory to the x-ray therapist, as he is loath to radiate the infant chest more frequently than is absolutely necessary. Some writers have described apparently increasing symptoms immediately after radiation, indicating in their opinion a primary stimulating effect. Our experience so far is quite contrary to this observation. All of our children appeared drowsy and comfortable the evening after treatment.

The reduction in the size of the gland is sometimes immediately visible; or again, there is no apparent change in size following x-ray therapy. This should not be a cause of worry, because when symptoms have been relieved our minds should be at rest. The size of the gland is frequently of little moment. It is for this reason that I agree with Friedlander, of Cincinnati, who claims to have treated the first case of thymic disease, in 1907, with entire cure by x-ray, when he says, "If the symptoms of thymic asthma are present, even if the x-ray of chest shows no thymus shadow, nevertheless, radiation should be given." This statement is not too strongly worded, for, to quote Mulford again, "If there is one real specific in pædiatric medicine, I feel that it is the radiation treatment of thymic disease."

Occasionally symptoms recur at a more or less remote period. Then it may be necessary to repeat the treatment. A point to be kept definitely in mind is that once a child has suffered from thymic dysfunction the parents should be warned that in case of certain chest diseases, such as whooping-cough and bronchitis, the little patient should be most carefully watched and should have a prophylactic x-ray exposure over the thymus. This necessity was brought home very forcibly by the death of one of our cured cases from whooping-cough. Subsequently another case, who contracted whooping-cough a year after treatment, was given x-ray radiation, which shortened the course and severity of the pertussis. The child recovered without accident. It is advisable also in a case once a subject of thymic disorder to provide a therapeutic x-ray radiation if any surgical operation is contemplated. We purpose posting a list of thymus cases in our admitting office as one form of insurance that these children will get the necessary extra attention if they apply for treatment in any of the surgical clinics.

Roentgen-therapy of the thymus in status lymphaticus has not been carried out in any large number of adults. However, Symmers reports that treatment of the thymus results in the reduction not only of the gland itself but of lymphoid structures at a distance from the site of radiation. The rather infrequent and invariably fatal thymic apoplexy does not respond to Roentgen-therapy for obvious reasons. This condition is due to hypoplasia of the brain vessels. In some cases of idiopathic epilepsy, it is notable that the seizures become less severe at an age approximating that at which the thymus undergoes involution. It has, therefore, been suggested that Roentgen-therapy applied to the thymus might reasonably offer some hope of improving these conditions.

The series used as a basis for these notes comprised 27 cases treated in the period from October,

1926, to the present. Although not large, the group comprised an interesting variety of clinical and x-ray findings. The response to Roentgen-therapy was excellent in all but one case, who died on the second day of its life; complicating the picture in this child, there was a definite birth injury. Two other cases are dead from intercurrent disease.

My conclusion as to the desirability and efficacy of Roentgen-therapy in thymic disorder in children with frank clinical symptoms has been discussed above. I would like to add in closing a quotation from F. W. O'Brien[4], of Boston, concerning the group without symptoms in which he states: "Since there is no evidence that the thymus is not an integral causative factor in the sudden death of children, and since it is known that involution of the thymus takes place rapidly and without harm following x-ray or radium radiation, it would appear not only desirable but requisite to prescribe Roentgen-therapy for those children presenting Roentgen evidence of broadened mediastinal shadows, without symptoms, in whom general anæsthesia or surgery is contemplated."

REFERENCES

1. EVANS, *Am. J. Roentgenol.*, **9**: 613, 1922.
2. LISS, *Am. J. Dis. Child.*, **24**: 192, September, 1922.
3. FISHER, *Am. J. Roentgenol.*, **14**: 244, September, 1925.
4. O'BRIEN, *Am. J. Roentgenol.*, **21**: 271, March, 1929.

THE RESULTS OF THE USE OF ACRIFLAVINE HYDROCHLORIDE IN THE TREATMENT OF UNDULANT FEVER

BY D. S. THURBER, M.D.,

Tlahualilo, Mexico

UNDULANT fever is becoming more widely recognized and discussed at the present time in all medical periodicals, but, in spite of the vast amount of information which has been gathered since Evans' discovery of the relation of the bacillus causing infectious abortion in cattle to disease in man and its close similarity to *Br. melitensis*, we are still in the dark as to many of the facts concerning human infection by this organism.

The question of treatment is one of the urgent problems facing us, as undulant fever always incapacitates the patient for months and occasionally for years, and is frequently followed by disabling joint pains and arthritis. The purpose of this article is to set forth the results of seven cases of this fever treated by intravenous administration of acriflavine hydrochloride (neutral acriflavine), the use of which has been favourably reported upon both on this continent[1, 2, 3] and in Europe. Undulant fever is, and has been, for some years more than ordinarily prevalent in this district, being known variously as "Fiebre Intestinal", "Fiebre de la Laguna", and being very frequently mistaken for typhoid and paratyphoid fevers. In the following brief case reports, 14 in number, 7 cases treated by acriflavine may be compared with 7 untreated treated cases.

CASE 1

A. S., male, aged 26 years, had irregular fever chills, and occasional drenching sweats from August 15, 1929, to September 22, 1929. The spleen was palpable, and the blood showed leukopenia with relative lymphocytosis. On September 16th he developed acute arthritis of the right sternoclavicular joint. Acriflavine was given as follows: September 22nd, 0.1 grm. September 25th, 0.2 grm. September 29th, 0.3 grm. After the third injection a temporary fall in the fever was followed by a rise which lasted till October 5, 1929. Subsequent to this date the patient remained afebrile, the arthritis cleared up and the patient was at work October 25, 1929. An agglutination test October 20, 1929, was positive to *Br. abortus* in 1-160.

CASE 2

A. H., male, aged 34, had fever, chills, drenching sweats, weakness, loss of appetite and prostration, which commenced on or about August 15, 1929. On admission to hospital, August 23, 1929, physical examination revealed nothing, and the blood showed leukopenia with relative lymphocytosis. The *Br. abortus* and Widal tests were negative, September 13, 1929. Acriflavine was given as follows: September 14th, 0.1 grm. September 26th, 0.1 grm. October 1st, 0.2 grm. October 10th and 18th, 0.3 grm. On October 25, 1929, the patient was afebrile and was able to return to work November 15, 1929, and has remained on the job since. The agglutination test on November 1, 1929, was positive to *Br. abortus* in 1-160.

CASE 3

F. A., made, aged 28, was admitted to hospital October 16, 1929, after 25 days of fever, headaches, drenching sweats, and prostration at home. Physical examination was negative. The white-cell count showed about 50 per cent lymphocytes. Acriflavine was given as follows: October 17th,, 0.2 grm. October 21st, October 28th, November 4th, November 11th and November 28th, 0.3 grm. Each injection was followed by a fall of temperature to normal or nearly normal,

XUM

for two or three days after which there was a gradual rise. The patient became discouraged and left hospital against advice on December 17th. At this time the daily rise in temperature was seldom above 100.5°, as compared with a daily rise to 103.5° or 104° on admission. The patient was eating and sleeping well and was free from the drenching sweats which were present on admission. A *Br. abortus* test on blood was taken on December 17, 1929, and was negative in all dilutions. In spite of this, the clinical similarity of this case to the others was so strong that I regarded it as one of the not uncommon cases of undulant fever, in which blood does not develop agglutinins till late in the course of the disease. The blood, taken on January 18, 1930, gave a positive agglutination test in 1-80. The patient is still having slight fever in the afternoons.

CASE 4

B. V., female, aged 40, was admitted to hospital on August 15, 1929. She had been confined to bed at home for three months with headaches, fever, anorexia, and pains in the joints, which finally centred into a low back pain which was so severe that the patient was unable to walk. The temperature ranged daily between normal and 101.5°. Physical examination revealed no cause for the fever. Shortly after admission to hospital the patient began having drenching sweats, which involved mostly the trunk and upper extremities. Acriflavine was administered as follows: September 28th, 0.1 grm. September 31st, 0.2 grm. October 5th and October 17th, 0.3 grm. The lumbar pain improved, so that after the third injection the patient was able to stand and walk with crutches. On October 19, 1929, the patient was afebrile and was discharged from hospital on October 30, 1929, still suffering from pain and stiffness in the lumbo-sacral region but able to walk without crutches. On January 10, 1930, the patient still suffered from the back pain, but had had no fever since discharge. The agglutination test on October 1, 1929, was positive for *Br. abortus* in 1-80.

CASE 5

M. G., male, aged 49, had been under treatment since April 25, 1928, with irregular fever chills, drenching sweats, etc. In June, 1928, treatment for an acute amœbic dysentery relieved that condition but not the fever. On September 20, 1929, the patient was very weak with a thready small pulse, and a slightly jaundiced tint of the skin and conjunctivæ. The temperature had ranged between normal and 102.5° for sóme days. The liver was palpable, 2 cm. below the costal margin; the spleen was not palpable. A marked hydroarthritis of the right knee and elbow joints was present. Acriflavine was administered as follows: September 20th, 0.1 grm. September 25th, 0.2 grm. October 9th and November 15th, 0.3 grm. Immediate improvement followed the first injections, but the fever recurred till after the last injection. On November 28th the jaundice had cleared, the joints were much less swollen and painful, and the patient was eating well and able to work as a street vendor. The agglutination test done on November 5, 1929, was positive (1-160) for *Br. abortus*.

CASE 6

P. N., male, aged 38 years, had suffered from fever, chills, headache, and prostration since January, 1929. In June, 1929, a toxic amblyopia, with advancing bilateral optic atrophy, developed and went on to complete blindness. On October 10, 1929, the fever was ranging between normal and 102.5° daily, and severe muscular and joint pains, marked anorexia and constipation were present; the pulse was rapid and weak. Acriflavine was administered as follows: October 10th, 0.2 grm. October 14th, October 25th, November 8th and November 27th, 0.3 grm. Sharp rises of the fever followed each of the injections, but following the last injection the patient remained afebrile. When seen January 8, 1930, the patient had remained afebrile and was eating well and feeling much stronger. The pains, however, were still very severe. Agglutination with *Br. abortus* on November 6th was positive (1-160).

CASE 7

C. S., female, aged 22. She came to my office on October 22nd, complaining of swelling and pain in the right ankle and right knee, weakness, lack of appetite, and afternoon fever. The patient was able to walk about and looked well. Physical examination was negative, except for the joints, a pulse rate of 110 per minute, and a temperature of 100.5°. The blood showed leukopenia with relative lymphocytosis. On subsequent visits the patient complained of chills and drenching sweats at irregular intervals. Agglutination was positive to *Br. abortus* (1-160) on December 18th. Acriflavine was administered as follows: January 3, 1930, 0.2 grm. January 6th and 10th, 0.3 grm. January 22nd, 0.3 grm. and January 29th, 0.3 grm. The patient continued with fever, severe sweats, and joint pains until February 14th, from which date a marked improvement in appetite and general condition was noted, with total absence of sweats and joint pains. The patient continued, however, to have an afternoon rise of temperature of from 99.4° to 100.5° until February 21st, and has been afebrile since.

The following seven cases were not given any special treatment, other than rest in bed, hydrotherapy, diet, etc.

CASE 8

G. C., male, aged 32. His illness began on October 22, 1927, with headache, chills, and drenching sweats. A palpable spleen and a marked leukopenia, with 65 per cent lymphocytes, were the only positive findings. After two months, a remission of two days' duration took place, followed by less severe symptoms for two and a half months, then another remission, subsequent to which the patient was able to work, but frequently had to lay off on account of the fever and severe joint pains. On November 26, 1929, he said he had been free from pains and fever since June, 1929. Agglutination with *Br. abortus*, November 26, 1929, was positive (1-160).

CASE 9

S. O., female, aged 26. She had been under attention from October, 1928, until November 12, 1929, at various times, for chills, pains in the joints, and pain in the chest; occasionally she had drenching sweats. In June, 1929, she aborted at three months, although she was the mother of a large family and had never had a previous abortion. On November 12th she stated that she was and had been perfectly well since about October 15th. Agglutination test on this date was positive with *Br. abortus* (1-160).

CASE 10

J. T., male, aged 22 years. He was unable to work from April 16, 1928, until August 3, 1929, owing to fever, headache, chills and, in the later stages, severe joint pains. Treatment in hospital from April 16, 1928, until July 9, 1928, did not help. Leukopenia, with 60 per cent lymphocytes, was the only positive finding of note. The symptoms gradually became less severe, and the patient returned to work in August, 1929. Agglutination with *Br. abortus*, November 26, 1929, was positive (1-80).

CASE 11

F. S., male, age 44, was first seen May 22, 1929, but had been feeling badly for some time; the chief complaint was lumbosacral pain. The patient was running a low grade fever and having occasional chills and sweatings. He was confined to bed for several months and afterwards was ambulatory, but unable to work till November 9, 1928, on which date he returned to work and has been well and free from fever and pain since. Agglutination with *Br. abortus* on December 18, 1929, was positive (1-160).

CASE 12

J. D., male, aged 20. His illness began about June 1, 1929, with headaches, weakness and fever. Chills and sweating were not present in the first weeks, but began after one month of fever. On November 28, 1929, he was still having all the above symptoms, but with practically no physical findings. At this date he was having very severe joint and muscular pains. Agglutination with *Br. abortus* was positive (1-360). He refused treatment with acriflavine, and when seen on January 3, 1930, was still suffering from all the above complaints, but slightly less severely.

The following two cases ended in death. No agglutination test was obtained, but the clinical similarity, combined with the prevalence of the disease in this district, leaves little doubt as to the diagnosis.

CASE 13

D. De la C., female, aged 43, admitted to hospital on April 27, 1928, after two months' illness at home. The complaints were fever, headache, weakness, anorexia. The spleen was just palpable, and the blood showed leukopenia, with 70 per cent lymphocytes. Physical examination was otherwise negative. She remained in hospital until her death on November 6, 1928, in the interval developing chills and drenching sweats, hydroarthritis of right knee and left elbow, a slightly yellow tint of the skin and conjunctivæ, secondary anæmia, and, in the last two weeks, incontinence of urine and fæces. Post-mortem examination revealed hypostatic congestion in the bases of both lungs, a soft flabby heart musculature, enlarged liver and spleen, and two small unindurated ulcers, one in the transverse and one in the decending colon.

CASE 14

H. N., female, aged 30, after three weeks' illness at home was admitted to hospital on May 6, 1928, where she remained for ten weeks. The fever ranged between 99.5° and 103.5°. She had frequent drenching sweats, but no chills. A marked leukopenia was present (3,200 cells per cm.m., with 63 per cent lymphocytes). There were no other positive findings. On July 23, 1928, she left hospital against advice, and was treated by quacks until her death on or about August 30, 1928. In a subsequent interview with her husband, he stated that she had become very pale, slightly yellow in colour, had gradually become weaker, and had developed a cough several days before her death.

METHOD OF ADMINISTRATION

Acriflavine hydrochloride tablets, 0.1 or 0.3 grm., may be used. By hard experience I have found that seemingly the best method of administration is to pulverize the required number of tablets in a mortar, subsequently dissolving the powder in about 20 c.c. of warm physiological saline solution; this is to be prepared immediately prior to use. An ordinary intravenous saline is then started, and when it is assured that this is going smoothly and not infiltrating about the vein to the slightest extent, the 20 c.c. of acriflavine is added to about 200 c.c. of warm normal saline and poured in. This solution is allowed to enter the vein at the rate of about 5 c.c. per minute, the flow being regulated by an adjustable clamp of the rubber tubing of the apparatus.

Quick administration invariably gives rise to burning of the eyes and nose, nausea, cough and vomiting and, if any of these symptoms are noted, the administration must be slowed down or stopped temporarily. In a few cases chills will commence during the administration, especially during the first, in such a case I think it is wise to immediately stop the same. Great care must be taken not to allow the solution to escape from the vein, as it will always give rise to a painful inflammatory mass and occasionally a slough. Strong solutions of acriflavine have been found to cause painful obliteration of the veins through which it was administered, and even the above dilution will occasionally give rise to a local hardening of the vein.

The dosage varies according to size, age, condition of the patient and the number of previous injections. In an ordinary sized adult, who is not excessively debilitated, I have found it satisfactory to start with 0.1 grm., subsequently giving 0.2 grm. and two of 0.3 grm. In those very ill it seems better to start with even less than 0.1 grm. and in children the ordinary dosage formula should be used. My experience has been that after four doses the maximum effect has been manifest and further dosage has been of little or no benefit in my hands.

As stated above, an occasional patient will have chills during or after the administration, but these are generally of short duration and are comparatively rare. Aside from this and the symptoms from quick administration and thrombosis of veins, no untoward effects have been noted from the use of this drug. The injection of acriflavine in these cases is usually but not invariably followed immediately by a sudden drop in the temperature, which rises again in a few hours and the following day drops back to normal or slightly above.

XUM

SUMMARY

1. Seven cases of undulant fever were treated by intravenous injection of acriflavine hydrochloride. In five cases the fever was arrested within one month after starting treatment; in two cases the fever continued but at a lower level.

2. In seven untreated cases the duration of the disease was from 9 months to 2 years, two cases ending in death.

3. The best results were obtained in patients treated during the earlier weeks of the disease.

4. If given after the development of arthritis, acriflavine seemed to have little or no effect on this condition. No chronic arthritis developed in the patients treated in the early stages of the disease.

5. The injections must be given slowly to avoid reactions.

6. Following the injections there occurs a decline, a rise, and a final decline in the fever. No severe reactions or harmful effects were seen.

CONCLUSION

In view of the cases cited I believe that by the use of acriflavine intravenously the course of undulant fever can be materially shortened, and the development of an incapacitating arthritis prevented.

All agglutination tests were done by Turner's Clinical Laboratory, El Paso, Texas, U.S.A., and I wish to thank Dr. Turner for his coöperation in this work.

REFERENCES

1. HOFFMAN, *J. Am. M. Ass.* **92:** 2169, June 1929.
2. KOPELOWITZ, *J. Missouri State Med. Ass.* **26:** 444, Sept. 1929.
3. *J. Am. M. Ass.* **92:** 244, March, 1929.

SOME OBSERVATIONS REGARDING PENETRATING AND PERFORATING OPHTHALMIC INJURIES*

BY F. R. BENNETTO, M.B.,

Hamilton

WHILE there are many types of industrial ophthalmic injuries or accidents, those that I wish to discuss are of the penetrating and perforating type. My records, covering the past 15 years, show about 1,100 accidental injuries in all, of which about 600 were penetrating, causing a wound in the conjunctiva or cornea, and of these about 200 were of the perforating type. Of these 200 odd perforating wounds, 16 required enucleation, 20 blind eyes and 25 aphakic eyes resulted; of the balance, about 50 had normal vision, about 50, 6/7 to 6/10th's vision, and the remainder, various grades of reduced vision. I noticed that they were largely industrial—the number of male patients far exceeding female. Although practising for a number of years in a district where the farmer outnumbered the factory employee, factory accidents exceeded farm accidents. Ulceration and infection of eye wounds seem to be more common among those from the farm and rural community than among those from the factory, especially during the past ten years. Penetrating wounds in children's eyes seem more liable to infection than those in the eyes of factory hands, especially where efficient first aid is given. Sympathetic ophthalmia occurred in but two cases. In one case blindness resulted in both eyes, due to the patient's absolute ignorance and disregard of instructions. In the other, enucleation was performed as soon as the symptoms were noted and resulted in ultimate good vision in the uninjured eye. Enucleation was usually advised when there was extensive laceration with involvement of the ciliary body and destruction of vision. My experience has led me to believe that much harm may be done to an eye by the inexperienced, who do not realize the damage they do in attempting the removal of foreign bodies embedded in the cornea. The use of atropine should be supervised by the specialist in patients over 40. The "shop" doctor was condemned by J. B. Stanford[1] who also favoured the physician and surgeon referring his eye

* Read at the annual meeting of the Ontario Medical Association, Toronto, May, 1930.

1. *South. M. J.*, May 1927.

cases as early as possible to the specialist. I agree with him, but also believe that friendly co-operation with first aid men will help all parties concerned. A. Maitland Ramsay says "The family practitioner should rid himself of unnecessary responsibility by transferring the case to a specialist at the earliest possible moment." Penetrating or perforating eye wounds rarely cause death but usually leave impaired vision. Retained foreign bodies are always a menace. Proper anæsthesia is essential for good results. Good light, magnification, proper instruments and antiseptics are very important. We need better standards to follow in estimating loss of vision and its relation to the employee's earning power.

The important points to be kept in mind when treating such cases may be briefly classified as follows:

Surgical anatomy—Various structures or combinations of structures may be involved. The eyelids and conjunctiva only may be involved, or conjunctiva and sclera; conjunctiva, sclera and cornea; or the conjunctiva and ocular muscles; possibly conjunctiva, sclera, cornea, and ciliary body. Wounds may have their point of penetration in the cornea, involving cornea, and iris; or cornea, iris and lens; or cornea, iris, ciliary body and lens. There may be loss of aqueous or loss of vitreous, with or without prolapse of the iris; or the lens capsule, lens substance or vitreous may protrude. Contrecoup splitting of the retina may occur with contusion by a blunt instrument.

The history of injury is important. Sharp instruments cause less contusion and usually deeper penetration, and blunt instruments naturally cause much more contusion. Heat, chemicals, acids and alkalies cause damage according to concentration and time of contact; explosives according to type, direction and substance carried with the explosive blast.

Bacteriology.—This may be considered first in connection with the penetrating body which may be contaminated by infective organisms, *e.g.*, dirty wood, finger nails, dirty rusty wire, earth and mud, etc. Second, the condition of the eye at the time of injury, *e.g.*, when septic organisms are present in the conjunctival or lachrymal sac. Third, constitutional conditions, may be a menace, *e.g.*, focal infections, syphilis, etc.

Symptoms are shock, pain, lachrymation, photophobia, hæmorrhage, and loss of aqueous or vitreous; later on keratitis, iritis, cyclitis, uveitis, or sympathetic ophthalmia may follow. A small foreign body may penetrate and give only slight symptoms, but if infection follows, such symptoms as pain, photophobia and congestion of the ciliary and scleral vessels will become more noticeable. Contused wounds are always accompanied by more swelling ecchymosis and hæmorrhage.

Diagnosis. — Usually inspection is sufficient, but I might mention that many a small clean-cut corneal penetrating wound has been overlooked where the loupe, oblique illumination or fluorescein has not been used. A foreign body in the vitreous may be visible with the ophthalmoscope. An air bubble in the lens or vitreous may give a light reflex somewhat resembling that from a foreign body. Some authors mention the use of a probe, this is rarely used on account of the danger of introducing infection. The diagnosis of injury to the muscles is usually made by rotation of eyeball in different directions. This, however, should not be done if aqueous or vitreous is escaping. X-ray is of great help in determining the presence of certain types of retained foreign bodies. I believe Dr. Sweet's improved apparatus for the localization of intra-ocular foreign bodies to be a great improvement on former types, and, once the technique is mastered, it is very accurate. I have proved to my own satisfaction that foreign bodies can be localized to within 1 or 2 m.m. of their actual position.

Treatment.—The important points from a general practitioner's standpoint, are: (1) secure antisepsis, which is obtained by the use of neosilvol, silvol, argyrol, unguentum hydrargyri bichloridi, 1-3000, unguentum hydrargyri oxidi flavi, etc. (2) Bandage and send to the oculist early. Debridement, asepsis, antisepsis and closure are carried out by the oculist according to each type of case. Various types may be considered under the following headings.

The eyelids.—If there is contusion with penetration, cold sterile saline or boracic compresses, applied early, lessen the swelling and discolouration. If the penetrating wound passes through into the nasal sinuses, infection may extend from the nose into the orbital

XUM

tissues. The complications that may develop in wounds of the orbital tissues are cellulitis, erysipelas, septicæmia, pyamia, tetanus, and hydrophobia. Healing of the wounds may be delayed by constitutional conditions, such as syphilis, tuberculosis or focal infection. Where the penetrating wound has extended into the nasal sinuses, the patient should be warned against blowing the nose and if air escapes into the palpebral tissues, pressure bandage should be applied.

Conjunctiva.—Penetrating wounds involving the conjunctiva only are often triangular in shape, the apex anterior, sometimes close to the corneal margin. After carefully removing foreign bodies and blood clot, the edges are brought into position with as few stitches as possible, using fine silk and a sharp cutting needle. If there has been contusion with laceration and possibility of infection, it has been my custom to apply a small amount of iodoform powder throughout the wound before closing.

Eye muscles require careful approximation. The sutures are preferably silk and include the muscle sheath as well as the muscle fibres. Rotation of the eyeball in such a direction as will put the muscle at rest, rather than in tonic contraction, assists in the approximation and gives less pain to the patient. The work is always carried out with greater ease and efficiency under novocaine-adrenalin anæsthesia than under ether, the bleeding being much less.

Cornea.—Small central clean-cut wounds, 1 to 3 m.m. long require little more than ordinary antiseptic or aseptic measures. Atropine always adds much to the patient's comfort, prevents the iris becoming adherent to the wound, and lessens the dangers of iritis and cyclitis. Wounds, 3 to 6 m.m. long are usually complicated by prolapse of the iris especially if there has been sudden escape of the aqueous. If the wound is marginal and if the iris has been protruding for several hours, the protruding iris is seized with Kalt forceps, freed from the wound by traction or the use of the iris spatula and, with the blades of the iris scissors applied close to the cornea, iridectomy is performed. The edges of the cut iris usually retract into the anterior chamber free of the wound, lessening the possibility of the iris becoming adherent to the cornea or corneal scar. Corneal scar is less where the wound is freed from the iris fibres, lens capsule or any foreign substance. In larger irregular shaped wounds of the cornea, it is a more difficult task to obtain approximation, without suturing, but even here sutures are avoided, and a conjunctival flap may be dissected up and drawn across the cornea in preference to sutures. If sutures are used, fine linen sutures specially treated with paraffin, with fine sharp needles, are preferable. Catgut should never be used.

Iris.—Penetrating wounds involving the iris are usually accompanied by hæmorrhage, owing to the free blood supply, the hæmorrhage being more noticeable if the wound is caused by a blunt instrument. If there has been sudden escape of the aqueous and prolapse of the iris, the wound may suddenly close against the protruding iris, the eyelid being tightly compressed by orbicular spasm and the hæmorrhage often quickly controlled. If the perforating wound is small and the instrument blunt, rupture of the sphincter or iridodialysis may occur, in which case the anterior chamber is often filled with blood clot. It is surprising how well hæmorrhage into the anterior chamber will be absorbed without leaving fibrous tissue behind, unless infection occurs. If infection occurs the case becomes much more complicated. Where the wound extends from the cornea into the sclera, especially for any distance, the ciliary body is usually damaged and my experience in almost all injuries of this type is that they have had unpleasant sequelæ, namely lowered tension, shrinking of globe, lens changes, with recurring inflammation under slight provocation. Any perforation of the lens or dislocation usually results in cataract. The speed of lens swelling and subsequent absorption is usually in proportion to the size of the opening in its anterior capsule. Lens substance carried into the vitreous is slowly or sometimes never absorbed. Degenerative lens changes may develop weeks or months after an injury.

Retina and choroid.—Where the penetrating body extends far enough into the eye to tear the retina or choroid, the visual disturbance is greater, the nearer the damage is to the fovea centralis. I have observed lacerations of the retina and choroid where the penetrating body has been blunt and the wound was confined to

the anterior segment but the effect of the blow apparently extended to the posterior segment. In these cases hæmorrhage into the vitreous may obscure the ophthalmoscopic picture. Degenerative changes in the retina may occur some weeks or months after injury.

Approximately the same remarks apply to the optic nerve as to the retina.

Complications.—Iritis, cyclitis, detachment of retina, lens changes may occur soon or follow weeks after the injury. Glaucoma followed in three or four cases. I have been unable to determine why increased tension followed in a few cases, while low tension followed in others. There is evidently a normal tension balance which is interfered with; in some cases secretion reduced, in others absorption or drainage is obstructed. I thought in one case the wound, involving the lens, caused sudden swelling, and blocked the normal drainage angle after the corneal wound had healed. Posterior sclerotomy was performed, which temporarily lowered tension, but eventually, on account of chronic pain and interference with earning power, enucleation was performed. In the other cases where lens swelling caused increased tension keratome incision was made and the lens substance removed by irrigation with good results.

Sympathetic ophthalmia or sympathetic irritation, I feel, are various stages of the same condition, except that the bacterial phase is more conspicuous in ophthalmia. While it is rare and seems less evident than in former years, yet it is still a menace and should always be kept in mind. Protein therapy may be beneficial by increasing the leucocytic action or the antibodies in the blood serum. Sympathetic irritation seemed more evident in cases of low tension than in those with high tension. Eyes subject to penetrating wounds should be kept under monthly or bi-monthly observation for some time, with instructions to the patient to report any pain or inflammation.

Retained foreign bodies are removed where possible; those in the anterior chamber by the hand magnet, those in the lens by combination of the giant magnet and hand magnet. Those caught in the iris should be handled gently and may require patience to disentangle. Foreign bodies in the posterior chamber may be accurately localized by Dr. Sweet's improved eye x-ray localizer, and, if the penetrating wound is large, may be removed through the point of entrance. If the patient came with the wound healed, the posterior route was resorted to. Careful localization and charting of plan of attack is helpful. The "pull" on the foreign body is influenced by the size of the magnet, the size and composition of the foreign body, and increases rapidly as the magnet and foreign body approach each other. One should also bear in mind that iron or steel moves with less obstruction through the aqueous and vitreous and is obstructed and held by lens substance, retina, choroid, ciliary body or sclera. The shape of the piece of steel or iron also influences the ease with which it may be withdrawn. After localization and before anæsthetizing, the magnet may be applied at the proper angle to pull the foreign body into advantageous position and the patient can tell if he feels the "pull." We do well to try and avoid the ciliary body, both in drawing the foreign body to the surface and incising for removal. The scleral puncture is usually approximated by sutures in the conjunctiva and connective tissue.

Tetanus was not seen in any cases where the wound was confined to the globe. It was observed late in one case where a manure fork penetrated the orbital tissues and ethmoid cells. Meningitis was observed and resulted in death where a hay fork penetrated the orbit entering the cranial cavity through the ethmoid cells close to the cribiform plate.

Proper and efficient first aid in ophthalmic accidents does reduce visual impairment and where possible this first aid should be supervised or rendered by the physician. After that the case should be sent to the specialist as soon as possible for examination, advice and treatment. Further it is a duty on the part of the oculist to continue educating the public, first aid officers, and the physician on the importance of prevention, care and cure of ophthalmic accidents.

In closing I desire to acknowledge the aid received from Dr. R. H. Henderson, now of Kitchener, and Dr. A. B. Ritchie now of Guelph, both former associates, who helped in making many of the records in my file and to express my sincere thanks to the physicians and surgeons who so kindly referred almost all of the cases.

XUM

PRELIMINARY MEDICATION IN CHILDREN*

BY WILLIAM E. MARTIN, M.B.,

Assistant Anæsthetist, Hospital for Sick Children

Toronto

IT is said that "every cloud has a silver lining" and the present ethyl chloride scare really paved the way for the observations presented in this paper.

Owing to the ban on the use of ethyl chloride it became necessary for us to resort to the use of nitrous oxide and oxygen for the purpose of induction. Then, as a natural sequence, this mixture became more frequently used as the anæsthetic agent for the entire operation.

With the use of gas and oxygen, especially in abdominal cases and bad fracture cases involving the joints, it very soon became apparent that some sort of pre-medication was just as essential for children as for adults. Accordingly, we made a fairly wide search through medical texts and recent literature for some guide as to drugs and dosage that we might use for children. We were unable, however, to get any definite information. In speaking of morphine, for instance, most texts state that children tolerate this drug badly; others state that morphine should never be given to children. It therefore became necessary for us to work out our own procedure, both as to the drugs and also their dosage. We kept a record of several drugs and combinations of drugs over a period of six months, and our observations have prompted this short report.

However, I wish to state, at the outset, that the observations made here are purely from a clinical standpoint, and that this paper is far from being a scientific investigation of the subject. What we were most anxious to determine was what drugs we could safely give to children, and what was the dosage necessary to enable us to give gas and oxygen efficiently.

The clinical result aimed at in pre-medication was the effect required in adult work. The pre-operative signs in children, however, are somewhat different, in that there is always a greater manifestation of fear and often unreasonable excitement. We therefore aim to have the children come to the operating room quiet and drowsy. If left alone the child should sleep, and only talk or take an interest in his surroundings if aroused. On pinching the skin the child should probably wince, but not cry. If respirations became slow and shallow we would then consider that the pre-medication had probably been too great.

Our early observations were made on codeine given both by mouth and by hypodermic injection, but it was very soon found that this drug was of little use except in very young children. It is, however, the drug of choice in babies from six to eight months up to two years, the dosage ranging from 1/8 gr. at eight months to 1/2 gr. at two years. This drug is best given by mouth.

We then began using morphine, very cautiously at first, but to our surprise, and contrary to what has been generally believed, the children tolerated the drug remarkably well and, indeed, required surprisingly large doses to secure the desired clinical effect. As with adults, it was soon found that divided doses were much more satisfactory than a single dose. The largest dose we have recorded was that of a boy of seven years, in good physical condition, who was given 1/4 gr. in divided doses of 1/8 and 1/8 gr., forty-five minutes apart. He showed some depression of the breathing centre, in that the breathing was slow and shallow, the pupils were pin-point, and he was quite drowsy. He showed no further signs of morphine poisoning, stood his operation well, and made an uneventful recovery. In fact, we have not had any cases in which the effect from morphine was in any way alarming. The dosage, then, for morphine has been set, for the time being at least, as the following:—

A child 4 to 8 years . . . . 1/12 and 1/12 gr.
A child 8 to 12 years . . . . 1/8 and 1/12 gr.
A child 12 to 16 years . . . . 1/8 and 1/8 gr.

The doses to be given at one-half-hour intervals, the first dose one hour, and the second a half hour before operation. I may state here that the above applies for hypodermic administration, as we have found it very difficult to give any of these very

* Read before the Section of Anæsthesia, Academy of Medicine, Toronto, April 22, 1930.

bitter drugs to children by mouth. This dosage applies to children who are of normal weight and in good physical condition, and we think it important to decrease the dose when the children are small, undernourished, or have any marked debilitating disease.

Morphine and atropine combined were also given in a small number of cases, the dosage of atropine being 1/400 to 1/200 gr., but the general impression about this combination was not very uniform, and we could not be sure that atropine served any useful purpose. We feel that it is unnecessary to give drugs to control the secretions, as excessive mucus is seldom encountered if induction has been smooth. In some cases it appeared to cause considerable discomfort, of which the children would complain. It was therefore discontinued, and morphine given alone, with a more uniform result.

Morphine and hyoscine were also given in combination to children, 13 and 14 years of age. The dosage of morphine was halved and 1/400 to 1/200 gr. of hyoscine given at the same time. Here again only a small number of cases were tried, and in each case the result was quite satisfactory, similar to that obtained when the full dose of morphine was given alone.

Recently we have been trying out paraldehyde. This procedure was suggested by Dr. Sington, in an article published in the *Proceedings of the Royal Society of Medicine*, July, 1929. The method there reported was to administer the paraldehyde by rectum one hour previous to operation, the dosage advised being one drachm per stone (14 lbs.) of body weight. This procedure was tried, but at once this difficulty presented itself, *viz.*: that the bowel had first to be cleared by enemas, and then followed by a retention enema which was occasionally partly or totally expelled. This rendered the technique most difficult, and Dr. I. Junkin conceived the idea of giving the drug by mouth and covering the disagreeable taste with syrup of orange. This flavouring apparently covers the paraldehyde fairly well, and the children take the dose with very little difficulty or objection. The dosage of paraldehyde has not yet been definitely worked out.

From the foregoing I think that we may safely draw the following conclusions.

CONCLUSIONS

1. The administration of gas and oxygen to children requires careful pre-medication, as much as or perhaps more than, is required for adults.

2. The best sedative for small children and babies is probably codeine.

3. Older children tolerate morphine very well, and require relatively large doses.

4. Paraldehyde probably has a place of some importance in the list of sedatives for children.

MIXTURES TO DEPRESS COUGH

BY V. E. HENDERSON,

Department of Pharmacology, University of Toronto, Toronto

THE ordinary expectorant mixture, discussed in a previous article, is in no sense curative but only palliative. It does not affect the cause of the disease. Only in one type of cough do expectorant mixtures aid in curing the cough itself, and this but rarely. This occurs when a thick sticky mucus, carried up the smaller bronchioles, lodges at a point of bifurcation and sets up cough which is persistent, and leads to irritation of the larynx, which becomes a new source for the cough reflex. An expectorant, then, setting up reflexly a flow of thinner mucus, lifts the stickier secretion and consequently allows the cilia to function normally and carry the thicker masses upwards. The previous violent coughing is reduced to a slight cough, or even a clearing of the throat will pass the bronchial mucus past the vocal chords. The prior violent coughing ceases and the irritated larynx has a chance to rest and recover.

Now such irritation, produced by coughing itself, is a frequent cause of cough production. The above type of cough and that in which mucus adheres to the vocal chords are perhaps the only ones which can be cured by medication. This second type is common after certain so-called influenzal bronchitides. The typical symptoms are a violent and prolonged coughing

XUM

soon after rising, probably due to dried sticky mucus adherent in the larynx. By the time this mucus is dislodged, the larynx is irritated and cough continues, but lessens during the day. One may almost speak of curing such a cough by medication.

The principles underlying the treatment are as follows: Firstly, an effort may be made to prevent the lodging of the sticky mucus. Iodides in small doses seem to be of definite value. How, we do not really know. Iodides, alone of all our so-called expectorants, are excreted by the bronchial, as they are by the salivary, glands. Some authorities believe that their presence in the mucus secretion decreases its viscosity.

Secondly, morphine and its congeners depress the centre for coughing. This is well-known, but physicians usually lose sight of the fact that morphine depresses also the reflex centre for bronchial secretion. This reflex centre is readily depressed by morphine. Frequently the physician prescribes an expectorant and morphine together. The sensory stimulus set up by the expectorant from the stomach fails to normally affect the bronchial secreting centre because it is depressed by the morphine administered. The major effect of the mixture is due to the morphine.

To return to the post-influenzal cough, we give to the patient morphine and iodides at night. He leaves a dose by his bed for the morning, and on awakening takes it, following it if possible by warm water. He stays in bed and refrains from coughing for a quarter or half an hour. In my experience, he may cough once, but not more that morning. He repeats the treatment the next night and is often cured. May I, however, point out that this method will not succeed with other coughs. The cough due to tobacco frequently is most irritating after going to bed. Morphine in the dose necessary in the post-influenzal cough will not stop such an attack.

To give morphine or its congeners with iodides palatably is not easy, especially if the compound tincture of camphor is used, and still less easy if potassium iodide is employed in place of the sodium salt. However, we can recommend the following:—

℞	Tr. Opii	mm. ii
	Sodii Iodidi	gr. iii
	Extr. Glycyrrhizæ Liq.	mm. x
	Syrupi	mm. xv
	Aquæ ad	dr. i
℞	Tr. Camphoræ Co.	mm. xv
	Sodii Iodidi	gr. iii
	Syr. Sarsaparillæ Co. (U.S.P.)	mm. xv
	Aquæ ad	dr. i
℞	Codeinæ Phosphatis	gr. ¼
	Sodii Iodidi	gr. iii
	Syr. Sarsaparillæ Co. (U.S.P.)	mm. xv
	Elixir Aromatici C. F.	dr. i

It must not be forgotten that cough is not produced solely by sensory impulses from the respiratory passages, but may be due to irritation from the digestive tract, especially the stomach. Lauder Brunton tells of a case in which he cured a refractory cough with a dose of bicarbonate of soda. The author has seen a good many cases of cough in which there was a mild tracheitis or bronchitis, and also a more or less marked or possibly a mild gastric upset, for example, flatulent dyspepsia. Treatment directed to the respiratory conditions was hopeless; expectorants only exaggerated the condition. Moderate doses of opium were unsuccessful, but the administration of an alkaline carminative at once relieved the condition.

XYLENE TREATMENT OF PEDICULOSIS.—C. Ferguson recommends the routine employment of xylene ointment in pediculosis. He finds that a large number of merchant seamen examined at Ellis Island suffer from this disease —*Pediculus pubis* is the chief offender; it is less noticeable than *P. corporus* and is less irritating. Seamen are often covered with these parasites from the eyebrows to the ankles, but most ships are supplied with tincture of larkspur and mercury ointments, which are efficient if used intelligently. The tincture, however, evaporates too quickly in the hands of the average seaman, and mercurial ointment is preferable, but it causes dermatitis in many cases, while prolonged use by ignorant patients may cause mercurialism. Since, moreover, the cost of these preparations is a consideration to the authorities concerned, Ferguson recommends the employment of xylene (25 per cent) in a base of equal parts of adeps lanæ hydros. and paraffin. molle because it is effectual and cheap. If applied undiluted, xylene is too iritating to the skin; mixed as directed it produces for a few minutes a mild warmth and a tingling sensation. This is relieved by rubbing, which distributes the ointment around the hair bases. Patients are instructed to apply the ointment from the axillæ to the ankles twice daily for at least five days. This is necessary to ensure destruction of the hatching nits, which process continues for four to seven days.—*J. Am. M. Ass.* p. 1134, April 12, 1930.

Case Reports

SOLITARY DIVERTICULITIS OF THE CÆCUM

By A. Stewart, M.D.,

Montreal

The following case report is presented as of interest because of the rarity of the condition, only eight similar cases having been reported in the literature. (Leonardo, *Annals of Surgery*, April, 1930).

A. L., a male, aged 54 years, was admitted to the Montreal General Hospital, on April 28, 1930, complaining of abdominal pain and tenderness.

He had been perfectly well until 2 p.m. the day before, when he was suddenly seized with severe generalized abdominal pain, cramp-like in character. He had had no nausea or vomiting, The bowels were regular and he had had no urinary disturbance. By the following morning the pain was unchanged in severity and character, but was localized to the right lower quadrant. He was seen by the ship's surgeon, who made a diagnosis of subacute appendicitis and referred him to the Montreal General Hospital.

The patient lay quietly in bed, could move freely without pain, and did not look ill. His temperature was 98.2°; pulse 80; respirations 20; leucocytes 8,200. He denied any previous attack similar to the present one.

He was a fairly well nourished, well developed middle-aged man. His colour was good; the eyes clear, pupils equal, reaction to light and accommodation, normal. The ears, nose, and throat showed no abnormality; the skin, clear and moist; tongue coated; teeth bad. No superficial lymphatic enlargement. The urine was negative. The chest and lungs were negative; the heart normal. Blood pressure was 140/90. No sensory or motor disturbance. Genito-urinary system, normal. Extremities, normal. The abdomen of flat, muscular type, moved freely on respiration; there was no visible peristalsis or asymmetry. The abdominal wall was resistant throughout, with some tenderness and rigidity in the right lower quadrant over McBurney's point. The organs were not palpable and there was no palpable tumour. Rectal examination was negative. A diagnosis of subacute appendicitis was made.

Operation.—Under ether anæsthesia, palpation of the abdomen revealed a mass in the right lower quadrant, which could not be felt before the anæsthetic was administered. Because of this mass, a right rectus incision was made below the umbilicus, for exploratory purposes. Examination revealed the presence of a mass in the posterior wall of the cæcum which was hard and firm to feel, but had not the clinical characteristics of a carcinoma. It was decided that this mass was inflammatory and not malignant. The appendix was normal.

For the cure of this condition a resection was done of the cæcum, with anastomosis of about two inches of ascending colon and eight inches of the terminal ileum. The abdomen was closed in layers without drainage.

FIG. 1.—Note the fæcolith A impacted in the diverticulum and the marked thickening of the adjacent portion of the cæcum.

The pathological report (by Dr. L. J. Rhea) was as follows:

"The specimen consists of the cæcum, a portion of the ascending colon, terminal ileum and the appendix. On the posterior wall of the cæcum there is a firm mass which has been

opened into. This has a thick fibrous tissue wall and between this and the wall of the cæcum there is a well circumscribed cavity measuring 1 by 0.5 cm. In this cavity there is a fæcolith. The cavity connects with the cæcum by a minute opening with regular edges. It is about 0.5 cm. in diameter. This opening is approximately 1 cm. above the orifice of the appendix. The appendix shows no gross lesion.

Microscopic sections through this mass show marked fibrosis of the pericæcal tissue and also of the walls of the cæcum. All this tissue is infiltrated with an acute and chronic inflammatory exudate. The lining of the cavity is necrotic pyogenic membrane, containing fæcal material. The outer wall of the cavity is composed entirely of inflammatory and connective tissue. At one point in the cavity can be seen remnants of mucous membrane. In the outer wall there is no muscle tissue. This is an infected diverticulum."

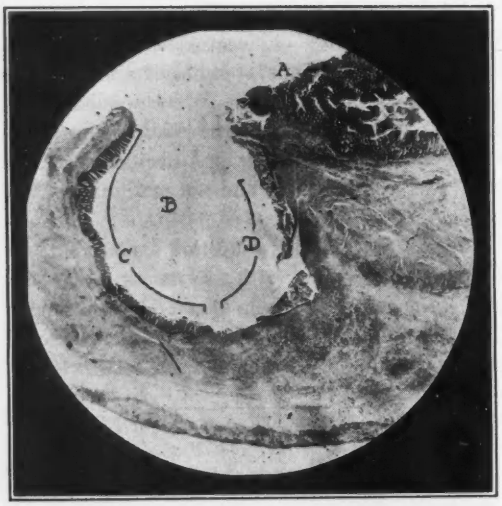


FIG. 2.—Section through diverticulum after removal of fæcolith. (A) Mucous membrane of cæcum. (B) Diverticulum. (C) Mucous membrane lining of diverticulum intact; (D) absent from ulceration; acute typhlitis most marked opposite.

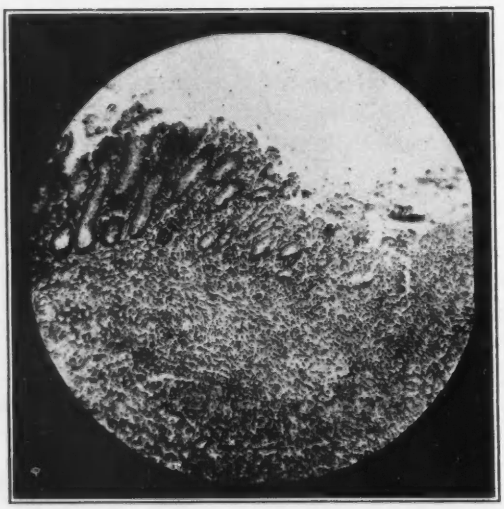


FIG. 3.—Junction of intact and ulcerated mucous membrane of the diverticulum.

SUMMARY

1. The condition is rare, only eight other reported cases can be found in the literature.

2. The pre-operative diagnosis is difficult. In this case, as in all others, the pre-operative diagnosis had been acute or sub-acute appendicitis, and the true nature of the condition was only revealed at operation or in the pathological laboratory.

3. The treatment is simple, being either excision of the diverticulum or resection of the colon.

4. The prognosis is good. In this case as in all other reported cases, patients have made an uninterrupted recovery.

5. This specimen is of the type of false diverticulum. The microscopic examination showed only mucosa and serosa present in the walls, no muscle fibres being demonstrated.

A CASE OF PERSISTENCE OF THE VITELLINE DUCT IN A CHILD ONE YEAR OLD

BY F. L. EID, M.D., C.M.,

Macklin, Sask.

On September 3, 1930, a child, male, aged 12 months, was brought to me for examination. The mother explained that since the child's cord had fallen off there had been a continuous discharge from the navel. Examination proved that the child was perfectly healthy, except that in the navel a small tumour was visible, the size of the little finger nail. This consisted of bright red mucous membrane with a mucous secretion. The surrounding skin was reddened and eczematous from the continuous discharge, which showed an alkaline reaction. Probing proved that a duct led from this small tumour

into the abdominal cavity. The diagnosis of persistent omphalomesenteric duct was made.

The treatment consisted in laparotomy. It was found that from the navel a 3½ inch long duct, open throughout its length, extended to the lower ileum, communicating with the bowel. The duct was resected from the ileum and the stump invaginated. The navel was excised. The recovery of the child was undisturbed. He was discharged as healed after 12 days.

In this case the ductus omphalomesentericus, which connects in fetal life the atavistic yolksac, the larger of the two globes formed by the blastoderm in the early development of the embryo, with the ileum, had persisted in its entire length. There are other clinical forms, which are due to partial persistency only of this duct, such as diverticulum of this duct. In this case the duct persists in the cord but is closed from the navel, causing a strawberrylike tumour on the navel. The duct may also partially persist in the form of a cyst inside the abdomen. In this case it is closed towards the navel and the intestine. Another imperfect form of persistency is the so-called Meckel's diverticulum. In this condition we find an appendix to the ileum from a few millimetres in length to, maximally, 30 cm., and a thickness from 1 cm. up to the size of the ileum itself.

The clinical complications caused by this abnormality in its various forms as mentioned above are numerous and sometimes very serious. Adenomata and carcinomata may develop in the "rests" of the duct, which show histologically cylindrical epithelium. In the case of a diverticulum of the cord and in the case of a fistula we may find a prolapse of the mucous membrane, even inversion of the intestine with ileus. In the case of a Meckel's diverticulum infection with inflammation may develop, with a clinical picture similar to that of appendicitis, caused especially by the presence of foreign bodies or intestinal parasites.

In some instances volvulus or intestinal invagination, leading to operations, demonstrates a Meckel's diverticulum as the cause of the disturbance. Sometimes tuberculous ulcers and typhoid ulcerations show a predilection for localisation in a Meckel's diverticulum.

The best treatment is total extirpation.

A CASE OF UNDULANT FEVER IN MANITOBA

By Campbell M. McIntyre, M.D.,

Manitoba Hospital,

Selkirk

The slow but steady increment in the number of cases of recognized undulant fever becomes a matter of growing interest both to the medical profession and laity. It seems that almost daily cases are being recognized in new localities and the economic factor involved is of no small moment. Reported cases in the United States will soon be numbered in the thousands. Great Britain numbers her cases in the twenties and in Eastern Canada no inconsiderable number have been recorded.

The case here recorded is presented, not for any particularly unique features it exhibits (other than that it is the first reported in Manitoba), but rather because it corresponds so closely with the clinical course found to be outstanding in the outbreaks in the United States. The characteristic symptoms as reported are "afternoon fatigability, headaches, backaches, enlarged spleen, heavy sweats, pains in the legs, relative brachycardia, low blood pressure" and I might add "an apparent well being of the patient which contrasts so markedly with the record of the thermometer".

Case Record

A. H., male, aged 29, an attendant in a mental hospital. He was born at Evesham, England.

Personal history.—The patient went to school until apprenticed to a butcher in Worcestershire in 1915 at the age of fifteen. He continued at this trade until coming to Canada in May, 1928. His first job in Canada was at Lacombe, Alberta, as butcher's assistant, slaughtering. He next worked for six weeks in the meat department of a department store in Edmonton. After this he took a job as attendant in the mental hospital. Measles is the only sickness he remembers having had in his lifetime. He had never missed a day at school or work since.

Present illness.—The patient came to Manitoba on September 12, 1929. He weighed 180 pounds and volunteered the information that he

XUM

could handle a quarter of beef with ease at that time. On February 15, 1930, he gave up work and went to bed. His only complaint was that he felt "a bit queer" and that he was tired out before the day was over. He did not look sick, but when his temperature was taken it was 102 degrees.

His own account of the onset was as follows: "I have not felt like myself for about two weeks. I did not feel right, but at the same time, I did not feel down and out enough to quit. I feel played out before the afternoon is over. I have felt warm and flushed during the latter part of the afternoon and early evening for some time. When these spells come on they are accompanied by headaches across the forehead and sometimes pain in the lower part of the back. I have been going out for walks to try and cool off."

When first seen, the appearance of the patient and his history were suggestive of some other cases of undulant fever seen by the writer, *viz.*, a slight coryza, a mild headache, pains in the back and the legs and marked thirst. All these things, together with his temperature, etc., superficially suggested an influenzal attack, many cases of which were prevalent at the time. It is of interest that the case reported from Alberta had a similar type of onset. Further inquiry showed no urinary or gastro-intestinal symptoms, except some loss of appetite, and no respiratory symptoms except a slight coryza. The patient did stress at this time his increasing weakness.

Physical examination.—GENERAL.—A well developed white male whose appearance coincided with his given age. He was moderately well nourished and the skin was flushed and moist. The patient was quite active and alert, if anything too willing to facilitate the examination. He protested that now that he was in bed, he didn't really feel sick and that he didn't think that there was much wrong with him.

HEAD AND NECK.—Eyes, equal, react to light and accommodation; no nystagmus. Ears and nose, externally negative. Teeth, all extracted—full plates—gums firm. Throat, tonsils, thyroid, negative. Adenopathy, none. Sinuses, negative; transillumination good.

THORAX.—Respiratory system, negative except for the slight coryza. Cardio-vascular system, negative, except for low blood pressure (blood pressure 106/70).

ABDOMEN.—Spleen enlarged and just palpable. No tenderness. The abdomen was otherwise negative. The rectal examination was negative.

Physical examination was otherwise negative.

The patient was under observation at first for nine days. During that time the outstanding features were: A temperature fluctuating between 99 and 104.6 degrees daily, the highest point usually occurring between 4 and 8.30 p.m. The respirations fluctuated between 18 and 22 per minute; the pulse, with slight variations, gradually rose from 78 to 100 in the nine days.

The patient perspired profusely once or twice daily. He drank copiously. He continued to protest that he felt well even when his temperature registered 104 degrees. His euphoria was so marked that it was constantly being commented upon. His coryza and back and leg pains cleared up in a couple of days. His headaches, not severe, were present on and off for a week or ten days. His appetite continued to be indifferent and fickle.

In search of a diagnosis, the following tests were carried out:—

February 19, 1930.—BLOOD.—Red blood cells, 5,100,000; white blood cells, 12,150; hæmoglobin, 100 per cent; colour-index, 1.0. Differential cell count.—Polymorphonuclears, 72 per cent; large lymphocytes, 21 per cent; small lymphocytes, 6 per cent; eosinophiles, 1 per cent. The red cells appeared to be normal.

February 19, 1930. — BLOOD — Negative for malaria. URINALYSIS.—Negative; (Diazo test, negative).

February 21.—BLOOD.—Widal test negative.

February 23.—URINALYSIS.—Slight trace of albumin; microscopically, occasional pus and red blood cells.

February 24. — BLOOD CULTURE. — Negative. URINALYSIS.—Special for tubercle bacillus, negative.

February 27.—SPINAL FLUID.—Clear; no increase in pressure. Cells; 3, lymphocytes. Wassermann test, negative. Mastic test, negative. BLOOD WASSERMANN TEST.—Negative.

March 12.—AGGLUTINATION FOR BRUCELLA ABORTUS.—Negative.

April 4. — AGGLUTINATION FOR BRUCELLA ABORTUS.—Positive (1:1280).

Following nine days' personal observation and

investigation of this case the patient was sent to the Winnipeg General Hospital, with a request for an x-ray examination of the chest and a test for the agglutination of *Br. abortus*. Clinical examination of the chest again being found negative, no x-ray investigation was made. The agglutination test for *Br. abortus* was reported as negative. A provisional diagnosis of pyelonephritis was made at hospital. This was later discarded and the patient was discharged from hospital on March 13th with the diagnosis: "Fever of unknown origin."

Immediately the patient returned from hospital, he was placed under further observation. He continued to run a daily fever with fluctuations 98 to 103.4 degrees until April 9, 1930. This covered a period of twenty-seven days. During the first seventeen, the temperature showed a gentle fluctuation of from 99 to 100.4 degrees. Then suddenly, for ten days, the oscillations as seen on the chart became very pronounced, reaching as high as 103.4° on some of the peaks. Just as suddenly as the flare-up occurred, the temperature dropped on April 9th. There was no exacerbation of symptoms during this bout of temperature.

The patient's history together with the whole clinical picture continued to impress one so strongly that this was a case of *Br. abortus*, in spite of the negative report received, that another blood specimen was sent for examination on April 4, 1930. The report received April 12th read, "The serum agglutinated *Br. abortus* in dilution of 1:1280 and *Br. melitensis* in dilution of 1:320 and failed to agglutinate *Bacterium tularense*."

Kept on a chart for 14 days following April 9th, his temperature remained normal. He gained 10 pounds during those two weeks to reach 160. His appetite improved fairly rapidly but his general strength returned much more slowly.

The total length of time elapsing from the time the patient noticed the first symptoms until his fever finally remained normal, was approximately 67 days.

No treatment apart from symptomatic measures was carried out.

Clinical and Laboratory Notes

HÆMORRHAGE AT THE OUTPOSTS

By Norman M. Guiou, M.D.,
Ottawa
Co-Editor with the late Bruce Robertson, M.D.,
Section on Blood Transfusion,
Canadian Army Medical Museum,

During the war many wounded died of shock and hæmorrhage "up the line" before they could be got back to a Casualty Clearing Station. Blood transfusion was new. It was gradually being introduced into the C.C.S.'s, but it was unheard of with a division in action where it was most needed. Capt. D. E. Robertson of the 1st Division made history and held up a life saving torch to the world when he performed a transfusion in the 3rd Field Ambulance Dressing Station on the Somme* in 1916. The 6th Field Ambulance, 2nd Division, saw the situation and it almost made some of the officers weep. No equipment whatever was available. Not knowing of Robertson's work, they went into action more than a year later.

Before

Gr.—2nd Cdn. Siege Bty.—Alone when hit, he had lost a lot of blood before a tourniquet was applied. He was brought into the Advanced Dressing Station with moderate shell wound of thigh; no fracture; very pale. The wound was packed and the tourniquet removed. He was given an intravenous saline, rallied, then died.

Pte.—6th Cdn. Inf. Brigade.—Hit on the road moving up at night, he was picked up by an ambulance driver and brought to A.D.S. Blood was trickling out of the back of the car. Shell wound, in the popliteal space, hæmorrhage easily controlled, but the man was pallid, "starey-eyed" and pulseless — dying. He started on a 29 mile journey to the C.C.S.

After

Pte.—20th Can. Batt.—He was brought into a dugout regimental Aid Post after a raid, with a large shell wound in the right Scarpa's triangle, bleeding profusely, although an attempt had been made to pack. The patient was

* The dying man lived and Dr. Robertson met him eight years after. The transfusion was performed with a citrate bottle made by the late Prof. Brodie and sent out to him by Dr. Gallie, of the Sick Children's Hospital, Toronto.

XUM

pallid and cold; a slight flicker of the pulse was still present. Oxygen was started at once; gum acacia intravenously was followed by citrated blood from a donor, bled by Capt. MacKechnie, without testing, owing to the dire necessity. The patient's cheeks got red and warm; oozing of the wound stopped; the pulse much better. The man was last heard of in England.

Pte.—24th Cdn. Batt.—He arrived at the main dressing station with a shattered humerus, swathed in copious blood soaked dressings; blood in stretcher; a flicker of pulse was present; the patient pale, "starey-eyed" and restless. He pulled his wounded tag off his tunic and tossed about, talking irrationally. The hæmorrhage was controlled by packing; blood transfusion. He was set out in fresh air surrounded by hot water bottles for several hours and sent down much improved. Report from No. 26 General Hospital—"Evacuated, Hospital Ship—England".

Pte.—7th Batt. Royal Scots.—This man was brought into the schoolhouse at Paturages near Mons, on November 10, 1918, pallid and pulseless. He had a shell wound in the thigh with a fractured femur. He was given 1,000 c.c. gum acacia, which produced a definite pulse, which, however, soon vanished, and his condition became very serious with developing air hunger. He was given 700 c.c. blood with marked effect; colour came into his cheeks and he wore a smile as he was started off on a 19-mile journey to the C.C.S.

There is need of transfusion at Canada's peace-time outpost line. A young Canadian mother died recently while her blood was being sent to the city to be typed. Canada's obstetrical Casualty List for 1926 (the latest analyzed) was 1,532, of whom 23 per cent were officially reported as dying from hæmorrhage.[1]

The chief reason why many outlying districts are without life-saving transfusion service is the difficulty in the way of testing a donor. Few doctors feel that they can carry a stock of serum II and III, which is costly and may deteriorate before the need for its use arises, and fewer still can resort to a centrifuge and microscope at 3 a.m. in a farmhouse far from home.

Eight years ago the writer[2] published a preliminary report on a simple test which he believes in its present improved state will help solve this problem.

THE FREEZING TEST

When incompatible bloods are mixed the plasma of one agglutinates the cells of the other. The clumps of red cells cannot be seen, however, as they lie suspended in the midst of opaque blood. If this other blood could be made transparent the clumps could be seen. After many experiments, laking by freezing was found to be the best way of accomplishing this.

The test is performed as follows:—

A cover slip is brought up under the blood drop on the donor's finger and touched to it at several points. Several small drops will freeze quicker than one large drop and also will not spill when the slip is turned over. I generally make one in the centre and four around this, one opposite each corner. The slip is inverted and a little ethyl chloride sprayed on its upper surface till the drops are seen to freeze.

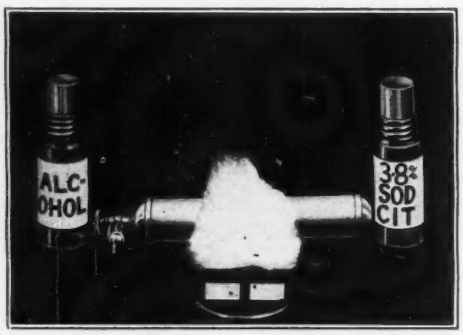


FIG. 1.—Materials required for donor testing—Thin cover slips at least ⅜ inch diameter, ethyl chloride, a large surgical needle for pricking the finger and using as a "platinum loop", isotonic sodium citrate, alcohol and absorbent cotton.

FIG. 2.—Freezing the five hanging droplets of blood.

The slip is then set down, the blood side uppermost. The same is repeated with the patient. By this time the donor's slip is beginning to thaw and looks transparent like red ink. The eye end of a surgical needle is dipped in the 3.8 per cent citrate and used to stir the 5 drops together and at the same time prevent clotting. The needle-eye is washed off, dried

with absorbent cotton, and the patient's slip similarly mixed and citrated and the needle-eye washed again.

Next, a needle eye-full of blood from the patient's finger is stirred into the donor's laked blood, the needle washed and dried and an eye-full of donor's blood stirred into the patient's laked blood. This takes but a few minutes. After a minute's delay, the donor's slip (placed nearest him) is picked up and rocked gently while being held towards the light, when, if agglutination be beginning, clumps may be seen forming which grow larger on standing. If no clumps are seen, but only the shimmering sheen of a falling film of corpuscles when the slip is tipped in the light there is no agglutination. The patient's slip is then examined. No agglutination on either slip means the bloods are compatible. Agglutination distinct or doubtful on either slip disqualifies the donor.

Exceptions may be made in the face of impending death with only one volunteer available. In such a case one would be justified in using a donor whose cells were not agglutinated by the patient even if the donor's blood agglutinates the patient's cells. A small preliminary injection of the donor's blood might be given and its effect noted. The main thing is the effect of the patient's blood on the donor's cells. Whether or not the donor's blood affects the patient's cells is of secondary importance, as harm is not likely to result in an adult, owing to the degree of dilution in the patient's blood pool.

I have used this test in a log cabin camp in the Gatineau Hills, in a remote farmhouse, in private city houses and in small hospitals without a donor testing service. In all I have done at least fifteen transfusions with it and have as much confidence in it as in any of the recognised laboratory tests. The only safety factor necessary when working without a microscope is to reject a donor if the test is not clear cut.

At present the writer is using the Scannell valve, syringes and saline ball with 18 F. catheter tubing (½ catheter for donor and recipient tubes) and Unger needles and connecting tips. It is a one-man outfit.

For country use the citrate method might still be best. It requires in addition to an "intravenous outfit", a large Unger needle with curved connecting tip and 6 inches of catheter tubing for bleeding the donor. The needle is directed towards his wrist. A vial of 78 grains of sodium citrate dissolved in 4½ ozs. of water in a pitcher or glass jar will handle at least a pint of blood if stirred or rotated while bleeding. This is poured into the intravenous set on top of the saline which the patient is getting.

SUMMARY

Immediate transfusion is necessary to save life in severe hæmorrhage cases.

With a little preparedness, blood transfusion can be done in the most unfavourable situations, without the drapery of the operating room, but with life-saving effect.

A test for donors is described which makes the doctor independent of any outside serum or laboratory equipment and which the writer hopes may help extend blood transfusion to our outlying districts.

REFERENCES

1. MACMURCHY, personal communication.
2. GUIOU, *Canad. M. Ass. J.* **12:** 488, 1922.

EYES THAT SEE NOT—WELL!—One out of every five men twenty years of age has defective vision, and does not know it, or knowing it, is still unwilling to take the steps necessary to correct the defect. This, and other facts bearing on one of the most important of the proverbial five senses of man, was brought to light in a study of the medical histories of 100,000 men, native-born, white, and over twenty years of age, made by the Research Division of the Milbank Memorial Fund, from records which the Life Extension Institute made available for analysis. Starting at the age of twenty and running through all age groups up to seventy, on an average of a little more than one-fifth of all persons examined had defective, *uncorrected* vision. Beginning at the age of forty, the prevalence of defective vision mounts rapidly but more than half of the defects are corrected. A certain amount of loss in the capacity of the eye to accommodate itself to distance is normal to growing older. After the age of forty, the normal eye tends to become presbyopic, that is, far-sighted, and to make reading and close work easy properly fitted glasses are required. Defective eyesight in the younger age groups, however, is distinctly abnormal and should be corrected without delay. Defective vision seldom "corrects itself." On the other hand, certain forms of eye defect, particularly that of near-sight, tend to become more aggravated with time and neglect, leading ultimately to partial or complete blindness.—*How to Live.*

XUM

Editorial

THE WINNIPEG MEETING—THE PRESIDENTIAL ADDRESS

ONLY six years have passed since the Canadian Medical Association was honoured by the offer of affiliation with the British Association, a relationship which was gladly accepted as an act of friendly comradeship shown by the senior to the junior association. Shortly afterwards an invitation from the local society in Winnipeg, the youngest of all the large cities in the British Commonwealth claiming place and influence, was accepted with much good will at an annual meeting of the British Association and its widely scattered branches. The task of arranging for a conjoined meeting was recognized from the first as an arduous one, and the Canadian profession owes much to the earnest self-denying work of the officers of both associations. Especially does the *Journal* desire to acknowledge the good services of Dr. Cox, medical secretary of the British Association, not only in furthering the proceedings which brought about the affiliation of the two societies but also in his never-failing assistance to the Canadian committee in all its efforts to make this joint meeting a success.

A success it was in every respect; in the warm reception accorded to the several parties as they landed in Quebec; in the magnificence of the opening ceremonies in Winnipeg; in the numbers present; in the excellent work carried on in its several sessions, and in the numerous social functions with which Winnipeg expressed its pleasure at the presence of its visitors from many lands. The *Journal* on behalf of the Canadian profession desires to express its congratulations to our Winnipeg confrères on the excellent manner in which all the functions of this conjoined meeting were carried out.

The address of the President was interesting and noteworthy. He began by extending a hearty welcome to our brethren from the Mother Country and to the many representatives of the medical profession south of the international line, and emphasized the value of such conjoined meetings in furthering a common outlook upon important problems and in strengthening good will and the desire for co-operation between the two great branches of the English speaking race. He then passed on to discuss some of the important topics calling for thought in both associations. The Canadian Medical Association, the President stated, was proud to be affiliated with the British Medical Association. Its members, he said, have always regarded Great Britain as the fountain head in medical education. It is, therefore, with pleasure that the Canadian profession has heard of two recent movements which will, it is hoped, increase the sympathetic feeling between the two associations. The Royal College of Surgeons of England has granted Canadians the privilege of passing in Canada the primary examination for the Fellowship, thus lessening greatly its cost; and the British Government has decided on the development of a large central post-graduate centre in London similar to those in Vienna and the United States. Hitherto students from overseas have found difficulty in obtaining in the numerous but distantly separated hospitals the instruction they desire, and have, therefore, with regret turned to foreign centres in spite of the many attractions London could offer them in other ways. All feel that medicine is making such rapid advances, both in theory and practice, that post-graduate instruction has become a necessity for the profession in every country.

The President then referred to the important subject now engaging the attention of the profession on both sides of the water, of how to bring the advantages of modern medical treatment to the assistance of every sick citizen requiring it. A large percentage of the clientèle of every practitioner is in receipt of a comparatively limited income. The statement has been made that, speaking broadly, ninety per cent of American families have incomes below $2,000.00 a year. When

the scourge of illness or accident falls upon those with such moderate incomes, the expenses involved in securing efficient treatment become a financial tragedy.

In the past, the majority of practitioners have given their best to the poor with little hope of corresponding reward, but the rapidly increasing costs of up-to-date diagnosis and treatment with their great demands on the time and energy of the physician have given rise to much difficulty and dissatisfaction. At no time in our history, said Dr. Harvey Smith, has medicine stood higher in public esteem and confidence than to-day, and never has our profession enjoyed a greater measure of good will and public support. Nevertheless, the problem of how to meet the greatly increased expense arising from the necessities of modern practice with its changed methods and outlook has given rise to much anxiety. Undoubtedly every citizen has the right to enjoy good health and to have skilled medical care when accident or disease overtakes him, and to this end some readjustment of the terms on which practitioners can offer their services to the class of patients with limited incomes must be made. The President, therefore, pleaded for an insurance plan, instituted, organized, and controlled by the profession. If the profession delay, the State may intervene.

The National Insurance Plan established under the British Health Insurance Act of 1911 secures for nearly one-half of the population of the British Isles effective and prompt medical aid, and although the system may not be free from imperfections, its success is attested by evidence of unimpeachable authority. Plans have also been adopted by our Western provinces to secure effective medical aid for their widely spread population. These were briefly described by the speaker. The statement of Dr. Leo K. Franckel, of the Metropolitan Life Insurance Company, an outstanding authority on life insurance was quoted. He writes, "To-day we know that fire is a hazard and we know that accident is a hazard and we provide against these hazards under the modern method of distributing the burden of the risk. Fundamentally this is the insurance principle. Cannot the same plan be applied to meet the cost of sickness which has been so successfully applied to meet the hazard of death, of accident, of fire, and many other contingencies of life? The cost must be provided for in advance of sickness and be distributed so that it bears equally upon all."

In the further course of his address the President briefly discussed the various problems connected with the nursing profession, and also the importance to the public of statutory regulations regarding the licensing of those members of the profession claiming to be specialists in any recognized field of special practice. In closing, he referred with regret to the lack of success in recent efforts to bring about closer Empire relationship in the obtaining of licence to practise, and advocated a system of intra-Empire licensure applicable to practitioners of adequate antecedents, good education and approved character, which will enable such to practise in any part of the British commonwealth in which circumstances may place them.

The address appeared to be of interest to all our visitors, and certainly demands from every member of our own association much thoughtful attention. A.D.B.

THE DISTINCTION BETWEEN ALLERGY AND IMMUNITY IN TUBERCULOSIS

THE examination of experimental and clinical data supplied by competent observers renders the statement that the phenomena of allergy and immunity in tuberculosis are distinct almost apodictic. To approach the subject with uniformity of nomenclature one can do no better than adopt the definitions given by Rich and McCordock[1] in their excellent paper on this subject. In brief, they define immunity as "a relative resistance of the body to living tubercle bacilli," while in allergy, "the injected body becomes changed in some manner which renders the relatively bland

1. RICH AND MCCORDOCK, *Johns Hopkins Hosp. Bull.* **44**: 273, 1929.

protein of the tubercle bacillus capable of acting upon tissues as a powerful irritant and poison." The body is usually said to be hypersensitive to the protein and the reaction is often exhibited by an acute inflammatory response and, depending on the dosage, fever, malaise, prostration and even death.

Since the time of Koch it has been generally accepted that an infected body is resistant to re-infection as well as being hypersensitive to tuberculin (tuberculo-protein) and it is this association which has led many observers to assert that the allergic reaction is necessarily the mechanism of immunity. If one examines the details of the differences in the reaction of the infected and normal animal to tubercle bacilli, at least three things are known, *viz.*, that in the infected body the bacilli of reinfection are fixed locally; there is accelerated tubercle formation; and, with large enough doses, there are necrosis of cells and an acute inflammatory reaction. In other words, one is faced with the paradox of an organism which is more resistant to living bacilli yet more susceptible to its protein by-products. The allergic acute inflammation may be beneficial to the hypersensitive body in helping to neutralize certain injurious products but there is no proof that it is essential to immunity. In fact, we have no actual conception what factors are responsible for immunity to living tubercle bacilli, and Rich and McCordock's comparison of the immune body to a poor culture medium appeals to anyone who has ever cultured tubercle bacilli, and is not unsuitable as a working basis. The most conclusive experimental evidence we have of the presence of immunity to tuberculosis in the absence of allergy is furnished by Willis. He inoculated guinea pigs with an avirulent strain of tubercle bacilli (R1), waited until demonstrable allergy disappeared, then reinfected them with virulent tubercle bacilli and found that they outlived the controls.

A multiplicity of clinical data does not contradict this view. For example, children are more apt to show a positive tuberculin reaction than adults, yet they are thought to be more susceptible to tuberculosis; again, a strongly positive reaction in an active tuberculosis does not necessarily mean a good prognosis. The point to bear in mind is that although allergy and immunity may co-exist and probably often do, yet immunity may be present in the absence of an allergic skin reaction. To date, we have no single index or test for immunity.

If immunity can exist without allergy, and if, as may be the case, the allergic necrotic reaction may even actually help in the spread of the bacilli, it would be desirable to set up a state of non-allergic immunity. The practical points at issue are twofold. First, as regards therapeutics, agents which will "desensitize" the body, (tuberculin or other products of the tubercle bacillus), should theoretically be indicated; secondly, as regards prophylaxis, some safe method of inoculation which will produce immunity and not set up an allergic state in the body would seem desirable. The therapeutic end has been extensively tried, by numerous observers, using tuberculin, with varying results, and perhaps the very danger connected with this product would justify search for some other. Prophylactic measures based on the ideas communicated above are still in the experimental stage, yet it is encouraging to find that Petroff and his associates[2] have shown that it is possible to inoculate guinea pigs intramuscularly with heat-killed tubercle bacilli without producing allergy, and it will be interesting to follow this work and discover whether these animals are immune to infection with living organisms.

ARNOLD BRANCH.

2. PETROFF *et al.*, *J. Immunol.* **16:** 233, 1929.

A LARGE INFANT.—Dr. Kötter, writing to the *Centralblatt für Gynäkologie* describes the birth of a child 6284 g. (about 13¾ lb.) in weight and 61 cm. long. The infant was born spontaneously and labour was fairly quick, the only difficulty being that the passage of the shoulders was delayed in the pelvis. Living infants of 6000 to 7000 g. are very rare; indeed only five cases are described in medical literature. The causes of the gigantism are not fully understood; troubles of internal secretion, superabundant nourishment, diabetes, racial or constitutional peculiarities of the parents, and an abnormally quick growth of the fœtus have all been put forward as responsible.

SHOULD DIGITALIS BE PRESCRIBED IN LOBAR PNEUMONIA?

THE value of digitalis in lobar pneumonia, a subject of active discussion for upwards of forty years, has been challenged by the clinical investigation of Niles and Wyckoff, the results of which are published in a recent issue of the *American Journal of the Medical Sciences*.* From the plethora of contributions on the use of this drug in pneumonia, a few will serve to illustrate the trend of opinion at different periods of time. Many years ago Carhart and, later, Mackenzie wrote disparagingly of its use in pneumonia. In 1916 Cohn, of the Rockefeller Institute, came to the conclusion that digitalis did no harm in pneumonia and might be life-saving. His first conclusions were strengthened a year later when he demonstrated that the drug produced the same electrocardiographic changes in the pneumonia heart that were found in normal controls. As a result of these researches digitalis has been given as a routine to all pneumonia patients at Bellevue and in the Hospital of the Rockefeller Institute. Three years ago Burrage and White reported a study of the records of 221 cases of lobar pneumonia in the Massachusetts General Hospital. Their conclusions in regard to the use of digitalis supported the opinion of Cohn. Now, after fourteen years of popularity, digitalis is, apparently again to go into the discard so far as the treatment of pneumonia is concerned.

The investigations of Niles and Wyckoff which are responsible for this reversion to the belief of Carhart and Mackenzie are thorough, well controlled, and convincingly presented. The work was carried out at the Bellevue Hospital over a two-year period, and was under the direction of a committee of the senior members of the staff of the hospital and the associated universities. As the cases were admitted to the pneumonia wards one was digitalized while the next admitted was used as a control regardless of any other factor. In this way errors from the selection of cases were avoided. The total number of cases studied was 835. Electrocardiograms were taken daily. During the second year of study those cases with systemic disease and those admitted after the eighth day of the disease were ruled out of both groups. The patients were given one gram or one and one-half grams of digitalis, according as to whether the body weight was under or over 150 pounds. This amount was divided into three or four doses and given at intervals of four to six hours. The cases were grouped according to age, sex, type of pneumococcus, and septic complications, and the mortality in the control and in the digitalis-treated groups was compared. Regardless of the manner of grouping, the mortality in the digitalized cases was as great as and commonly greater than that in the control groups which received none. From five to ten per cent more cases died in each digitalis-treated group than in the corresponding control.

Perhaps the most convincing argument against the use of the drug in pneumonia arose from a consideration of the mortality in cases with auricular fibrillation or flutter. There were thirty-three cases presenting this complication—sixteen in the digitalis-treated group and seventeen controls—with a mortality of 87.5 per cent in the former as against 53 per cent when the drug was not given. The liability to error in conclusions based upon small series of cases, and upon groups treated without due regard to the laws governing the compilation of statistics, need hardly be pointed out here. The authors have recognized these dangers and have striven to eliminate them in so far as is possible. To our knowledge no one has heretofore planned and carried out such a deliberate and scientific study of this problem. Such clinical investigation is worthy of the highest commendation, for it goes far towards dispelling erroneous ideas which have crept into medicine, more through personal opinion than as a result of well-grounded fact.

E. S. MILLS.

* **180**: 348, 1930.

XUM

THE ESSENTIAL UNITY OF THE NATURAL SCIENCES

RECENT advances in many branches of scientific research have tended to emphasize the essential unity of all the sciences in the struggle to unfold the mysteries of the phenomena of life and nature. Biology, physiology, biochemistry, physical chemistry and pure physics deal fundamentally with the same laws, and it is becoming more and more difficult to delimit the region peculiar to each.

Depth of mental focus is what is now most needed by the physiologist, the biologist, and the physician, as a prerequisite to their best work; for they are dealing with exceedingly abstruse systems, in which increasing complexity enormously magnifies the number of possible structures and relations. Below the intricacy of organization which the microscope reveals even in a single cell lie the bewildering phenomena of the colloidal zone, of molecular orientation and aggregation, of atomic groupings to form molecules, and of electronic aggregation to form atoms. These are not isolated happenings, but are interrelated parts of every phenomenon and serve to make the whole.

Few lines of recent research exhibit such ramifications of interest to biologists as that dealing with colloidal solutions. In biology and medicine there are naturally many highly controversial questions involving colloid phenomena. Such differences of opinion among authorities should serve to stimulate research along these lines to the greatest degree, although at times progress may be retarded for decades by those workers who are not in a position to appreciate such modern conceptions.

One field of medical science which has received considerable attention by a few workers, using the tools forged by the physicist and chemist, is that of immunology and bacteriology. It has been shown that bacteria behave in many respects similarly to matter in the colloidal state. As early as 1904, Bechhold demonstrated that bacteria in an aqueous medium carry a negative electrical charge, as evidenced by migration in an electrical field to the anode. Studies upon the viscosity, surface tension, and conductivity of bacterial suspensions have further indicated the similarity in behaviour between bacteria and colloids. This work has proved to be of considerable practical importance. For example, "rough" and "smooth" strains of bacteria can be differentiated by measuring the electric charge of the organisms. Furthermore, there is considerable evidence to support the view that phagocytosis is almost entirely a function of the surface electrical properties of the phagocyte and the particle engulfed.

It is recognized that bacteriological and serological phenomena cannot be entirely explained by means of our present knowledge of colloids. It cannot, however, be doubted that they are closely connected with changes in the colloid system. If serological phenomena are considered from the standpoint of colloid chemistry, interesting problems are discovered, the most unusual being that of reciprocal flocculation independent of the charge. It would be an error to regard the colloid state as an accidental characteristic of a substance or system independent of other physical and chemical conditions; it is closely related to other properties and to the chemical constitution of the substance. Between the chemical and physical point of view there is no contradiction. One should rather attempt to become acquainted with the previously unknown behaviour of certain colloids, which may, possibly, explain the specificity which is so characteristic of serological reaction.*

In this connection, a report appears in this issue of the *Journal* (See "Special Articles") on the application of a method used in physical chemistry to the elucidation of a very important problem of the present day, namely, the virulence and grouping of the meningococcus.

JAMES GIBBARD.

* The reader is referred to the following textbooks, from which the above material has been largely drawn:

Colloid Chemistry, Alexander, 1928.

Physical Properties of Colloid Solutions, Burton, 1920.

The Effects of Ions in Colloidal Systems, Michaelis, 1925.

Editorial Comments

THE PASTEURIZATION OF MILK

According to the Annual Report of the Medical Officer of Health for Winnipeg, Dr. A. J. Douglas, pasteurization of milk is practised in thirty-two Canadian cities. In three of these, namely, Hamilton, Niagara Falls, and Saskatoon all the milk sold is so treated. In Toronto and Windsor, 99.5 per cent is pasteurized; in Ottawa, Fort William, and Verdun, 98 to 98.5 per cent. Sixteen of the thirty-two cities, including those mentioned, provide milk of which 90 per cent or more is pasteurized. In Winnipeg the proportion of pasteurized milk is 62.6 per cent, the balance of the supply being 1.4 per cent certified and 36 per cent from tuberculin-tested herds. In the United States 90 per cent of the milk is pasteurized in practically all the large cities. Dr. Douglas thinks that this ideal should be aimed at in Winnipeg. It may be taken as certain, therefore, that Dr. Douglas belongs to the group of hygienists who believe that all milk should be pasteurized, even when its antecedents are unimpeachable. Others, pointing to the possibility that milk when pasteurized loses some of its virtue as a food for infants, a question that is certainly not settled to our satisfaction as yet, think that a pure, clean, natural product is the ideal to be aimed at. Undoubtedly, with a perfect hygienic technique, embracing the tuberculin testing of cattle, the elimination of the infected, attention to the cleanliness of the animals and barns, supervision of the health of the personnel handling the milk and others of the farm entourage, proper storage, and quick transportation in refrigerator cars, provided that all this were 100 per cent perfect, pasteurization would be less necessary. But could it be dispensed with? Theoretically, yes; practically, no. Ideals are never reached; carriers of disease are hard to detect, until, at least, the outbreak of some infectious disease directs suspicion to some particular quarter. Then, again, account must be taken of the fact that the tendency is growing for milk to be handled by large companies and in large bulk, so that one infected sample of milk will contaminate the whole of an immensely larger quantity, with the probable widespread dissemination of disease germs. Dr. A. S. M. Macgregor, the Medical Officer of Health of Glasgow in his paper entitled "The place of pasteurization in a scheme of milk distribution", which appeared in our October issue, states that all cases of typhoid and paratyphoid fevers, scarlatina, and diphtheria which were traceable to the use of milk occurred in persons who used the milk in its natural state, the milk being contaminated through the medium of an infected person on a farm supplying a local dairy in a suburban area. In no instance did these cases of disease follow the use of pasteurized milk. He adds: "Infections occur with sufficient frequency on the comparatively small proportion of raw milk to make one wonder what would happen if the protection of pasteurization were removed." There is experimental evidence as well as the evidence of experience that efficient pasteurization is of real protective value against bovine tuberculosis. Dr. Macgregor thinks that the practice of pasteurization cannot be dispensed with until tuberculosis in dairy herds has been reduced to a minimum. So far, so good. But what about the danger from diphtheria and scarlet fever, to say nothing of undulant fever? By all means rid our cattle of tuberculosis, but would it not be still safer to apply pasteurization to all milk whether from supposedly tuberculosis-free herds or not? Most hygienists in Canada would support the latter proposition, we think. A. G. N.

LUDWIG'S ANGINA

This gangrenous induration of the neck, or fœtid parabuccal abscess, which is usually spoken of under the more familiar name of "Ludwig's angina" is said by Thomas[1] in a review of 106 cases to have a mortality of 40 per cent. Consequently, any evidence pointing to an etiological agent amenable to treatment is welcomed. This remark is prompted by a recent article by Smith,[2] who reports on the experimental production of a similar disease in guinea pigs after the inoculation of material from pyorrhœa into the inner margin of the gums. From the lesion he recovered the organisms usually associated with pyorrhœa, Vincent's angina or certain non-tuberculous pulmonary lesions, *i.e.*, spirochætes, fusiform bacilli, vibrios and anærobic cocci. This work supports the evidence offered previously by other observers[2] that these organisms play an etiological rôle in cases of Ludwig's angina. As Smith has previously pointed out that arsphenamine has been helpful in the initial stages of fuso-spirochætal infections of the lungs, he suggests that arsenical therapy would appear to be indicated in those cases of Ludwig's angina due to these organisms, accompanied, of course, by suitable surgical treatment. ARNOLD BRANCH

1. THOMAS, *Ann. Surg.* **47**: 335, 1908.
2. SMITH, *Proc. Soc. Exp. Biol. & Med.* **27**: 941, 1930.

XUM

THE CAUSE OF HODGKIN'S DISEASE

Hodgkin's disease has for years been a pathological problem. It still is. It may properly be described as a disease of the lymphadenomatous system, but one having features *sui generis*. It has some resemblance to malignant growths, in that the process may extend beyond the lymph-nodes in which it originated and invade adjacent tissues and organs, such as the lungs and pleuræ, and, also, may produce lesions not unlike metastases in the distant spleen. Yet the histological features do not resemble those of lymphadenoma or any of the myeloid hyperplasias. Rather do they suggest a chronic infective form of inflammation of a special kind. differing from all others. There is multiplication of the lymphoid elements, and, with this the appearance of cells much larger than the lymphoid cells, having elongated pale-staining vesicular nuclei. These elements grow steadily and relentlessly until the normal orientation of the nodal structures is destroyed. The particular and characteristic feature is the appearance of considerable numbers of "giant cells", having one, two or more nuclei. These particular cells resemble the so-called "foreign body giant-cells" rather than those met with in tuberculosis and the other forms of infectious granulomata. MacCallum, of Baltimore, has occasionally, however, found giant cells with small nuclei arranged in a ring or horseshoe, thus arousing the suspicion of a tuberculous infection at work. The lesion is progressive towards the replacement of the lymphoid and the other cells referred to by fibrous tissue. Necrosis, not unlike caseation may occur.

What of the cause? Sternberg for a time held that the disease was a form of tuberculosis, probably due to an attenuated bacillus. Tubercle bacilli have been found, though very occasionally, in the glands of Hodgkin's disease, but have been interpreted as being, not the cause, but an associated condition. If the disease were a mild form of glandular tuberculosis one would expect that recovery would frequently ensue, but, on the contrary, death is the inevitable outcome.

Fraenkel and Much have found certain Gram-positive rodlets in the lesions of Hodgkin's disease which they regard as specific, and Bunting and Yates have described some pleomorphic diphtheroids on which they pin their faith. None of these organisms have as yet been proved to be the specific cause, and animal experimentation has been devoid of results. The frequent, though not invariable, presence of eosinophile cells in striking numbers might be interpreted as a reaction to some unusual toxin.

Recently, Dr. P. F. MacGinnis,* pathologist to the Chesterfield and North Derbyshire Royal Hospital, reports finding a large spirochæte in the cervical glands of two consecutive cases of Hodgkin's disease. This gives a new lead which should be followed up. Spirochætes are numerous and somewhat ubiquitous organisms but we may hope that this clue may prove more fruitful than the others.

A. G. N.

* *Brit. M. J.* **2**: 456, 1930.

INFANT TRAINING

We have received a series of six small folders on problems connected with infant training and child welfare, published by the Canadian Council on Child and Family Welfare. The material in them represents psychological facts extracted from publications of the Ontario Department of Health and the National Committee on Mental Hygiene on the following subjects: Problems in Enuresis; in Food Habits; in Temper Tantrums; regarding Fear and Nervousness; Disobedience; and Dishonesty and Untruthfulness; all of great importance for the guidance of a mother in the development of her offspring. These folders are for general distribution and can be obtained by applying for post-natal letter service, Canadian Council on Child Welfare, 406 Plaza Building, Ottawa.

A. D. B.

A MEDICAL ARTS CALENDAR

Those who are interested in the history and practice of Medicine as they are portrayed in art would be delighted with the Medical Art Calendar for 1931, published by J. Philip Kruseman, the Hague, Holland.

This calendar is the thirteenth in succession and has been produced with the collaboration of Drs. A. Sikkel, J. G. De Lint, and J. B. F. Van Gils, men whose work in connection with the history of Medicine is outstanding. Some twenty-four reproductions *in parvo* of paintings of medical interest, as well as four title pages of well-known books, embellish the work, and the letterpress is in Dutch and English. Such artists as Rijckaert, Rembrandt, Rubens, Jan Steen, Frans Van Mieris, Adriaen Brouwer, and David Teniers the Younger are represented, with others of less note.

The illustrations are of somewhat uneven quality, but all are pleasing, and many are charming. We find here Rubens' great picture of St. Ignatius Loyola casting out Devils, from the Belvedere Gallery in Rome, other versions of which may be seen in Vienna and, we understand, in St. Mary's College, Montreal; Teniers' The Tooth Drawer; Jan Steen's Sick Woman and The Barber Surgeon; and Rembrandt's portrait of Dr. Euphraim Bueno, from the Six Collection at Amsterdam. The title pages are those of the Theatrum Anatomicum

of Caspar Bauhin, the Spiceligium of Theodore Kerkringh, the Encheiridium Anatomicum of Riolan, and the Alkmaar Pharmacopœia.

The price is $1.50. We are informed that it is possible to obtain the pictures of the preceding calendars, together with albums for holding them, at a cost of eight shillings and sixpence each, or the twelve albums for five pounds, on application to the publisher. The calendar is beyond question an unusual and artistic production. A. G. N.

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA

The Royal College of Physicians and Surgeons of Canada desires to draw to the attention of the physicians and surgeons of Canada, Section 5 of the Act of Incorporation of the College, which Section reads as follows:—

> "The Council may, at any time within two years after the coming into force of this Act and without examination, select and admit as Fellows any duly qualified persons domiciled in Canada who have in their opinion given evidence of high ability in one or more departments of medicine." (Act assented to and in force June 14, 1929.)

Members of the profession who consider themselves as qualified for admission to Fellowship under this Section of the Act, are invited to apply for qualification forms to Dr. T. C. Routley, Registrar-Secretary of the College, 184 College Street, Toronto.

Special Articles

THE ELECTROPHORESIS OF NEISSERIA INTRACELLULARIS (MENINGOCOCCUS)

A PRELIMINARY REPORT*

BY JAS. GIBBARD, M.Sc.,

Ottawa

This paper is more of the nature of a preliminary report, presented at this time with the hope that it may suggest a new method of attack on the problems of determining in the laboratory the relative virulence of strains of meningococci and of the potency of antimeningococcus sera. Since the whole field of meningitis has been so completely reviewed from all angles many times, only those references which are pertinent to the contents of this paper will be quoted.

Meningococcic meningitis is to be considered an extremely important public health problem at the present time. Dr. McCoy, of the Hygienic Laboratories, Washington[1] states that "More serious outbreaks have occurred in the past year than since the world war." Dr. M. J. Rosenau[2], in his book states, "It is not clear that any of the measures so far taken have either materially influenced the course of epidemics or prevented the spread of the disease." These statements made by outstanding authorities serve to emphasize the importance of the problem.

The recognized method of treatment of meningitis is by the use of anti-meningococcus sera. This is a specific treatment and if there were a laboratory method of measuring potency in terms of therapeutic efficacy the treatment of cases of meningitis would be relatively simple. However, as Topley and Wilson[3] state, "As yet there is no laboratory method by which the therapeutic power may be correctly gauged." Further evidence indicating how serious this phase of the problem is becoming has been presented in American literature on numerous occasions within recent years. Norton and Gordon[4] report an epidemic in Detroit involving 867 cases. Of these 430 died, giving a case fatality rate of 53 per cent. They concluded their report by stating "It must, therefore, be concluded that the strain of meningococcus encountered was of unusual virulence, or that the therapeutic serums available were not specific against this strain."

All of the immunological tests have been applied in an attempt to measure potency. At the present time the agglutination test is the most widely used, but it is recognized that this test serves only to indicate that the horses have been injected with certain standard strains of meningococci. In fact, it has been reported that antisera of the lowest agglutinin content have been more efficacious than others of high agglutinin titre.

Before attempting to measure the potency of anti-meningococcus sera there should be a laboratory method of determining the relative virulence of strains of meningococci. However, such a method does not exist, largely because there is not a common laboratory animal susceptible to meningitis. At the present time cultures are carried on media varying widely in composition in different laboratories and these cultures, ten to fifteen years old, are used not at all infrequently for injecting horses for the production of antisera. It is a well known fact that cultures of other organisms lose their virulence, and in some cases pathogenicity after prolonged culture in the laboratory. It would, therefore, be logical to assume that meningococci may behave in a similar manner.

---

* A paper read on August 28, 1930, at Winnipeg, in the Section of Public Health, British Medical Association. From the Laboratory of Hygiene, Department of Pensions and National Health, Ottawa, Canada.

XUM

The determination of virulence of strains of meningococci is extremely difficult. The situation is adequately summarized by Murray[15] who writes as follows:—

"The determination of the virulence of cultures has been admitted by most authors to be extremely difficult, and the results have been so inconstant from one experiment to another, although the same strain has been used, that it has been held to be impracticable (Dopter 1921). One of the most important factors upon which success depends, both for the titration of virulence and for its maintenance in cultures, is the constitution of the medium (Murray and Ayrton, 1924). In experiments in which all other known factors have been kept as nearly as possible comparable, controlled variation of the concentration of tryptic digest in the medium has resulted in the cultures being highly virulent on one and harmless on another medium."

Gordon[5] believes that "too much weight must not be laid on the results obtained with laboratory specimens, as experience has shown that meningococci under prolonged culture on egg and trypagar media may tend to become more highly specialized than when recently isolated."

Gordon[6] attempted to use endotoxin as a measure of virulence, but this method has not been generally accepted. Murray[15] states "The exact relation of virulence to endotoxin is still uncertain, but the available evidence tends to show them to be unrelated (Gordon, 1920, p. 45; Murray, 1929). Strains of low virulence with a high yield of endotoxin are found, but more commonly a low yield of endotoxin is associated with a high or medium virulence. Exalting or lowering of virulence does not appear to alter the quantity of toxin yielded by a strain but only affects the power of infecting animals."

In the light of the work by Gordon and Murray on the effect of culture media on virulence, it is possible that by careful selection media have been developed in certain laboratories which will maintain virulence and that this fact may also account to some extent for the variation in clinical results with different antisera.

Another difference frequently noted is that some freshly isolated strains are inagglutinable, but after cultivation for a time in the laboratory they agglutinate perfectly. The author has knowledge of one very striking case of this kind. A patient died within twenty-four hours from fulminating meningococcic meningitis. The organism isolated from the spinal fluid would not agglutinate with any sera, but after cultivation for approximately three months, it agglutinated perfectly. It must be assumed that this strain changed its characteristics during these three months' cultivation on artificial media.

The one point upon which all workers seem to agree is that meningococci are very unstable in their characteristics, and that it is very difficult to produce consistent results. Such a simple procedure as transferring the cultures on stock media frequently results in poor or negligible growth, even though the same batch of media is used under identical conditions. Cultures will suddenly die out for no accountable reason. Taken by and large, the group is very poorly understood, especially in relation to its immunological phases.

Since the ordinary immunological tests have failed to give any valuable information as to the virulence of the meningococcus, or the potency of antisera, it was thought that a study of the behaviour of the meningococcus in an electrical field (electrophoresis) may yield some further data. It at least offers a new method of attack.

Jensen and Falk[7], have shown a distinct correlation between the virulence of the diphtheria bacillus and the rate of migration in an electric field (electrophoresis). Similar correlation has been obtained by Falk, Jacobson and Gussin[8], with a pneumococcus. Kahn and Schwarzkopf[9] have determined the rate of migration in an electric field of the rough and smooth strains of tubercle bacilli, but do not yet wish to convey the impression that there is also correlation with virulence.

Mudd, Lucke *et alii*[10] have shown that phagocytosis of bacteria is correlated with the potential charge,* *i.e.*, particles of a high charge are not phagocytized, but when the charge is lowered, *i.e.*, by the addition of serum, they are readily engulfed.

Murray[11], states, "As the virulence of a strain (meningococci) is increased, it appears to become more resistant to phagocytosis although this resistance is lost when the cocci are killed."

Hiss and Zinsser[12], state in reference to meningitis, "A certain amount of prognostic information can be obtained from spinal fluid in that in severe cases that are not doing well there will be a considerable number of organisms, extracellular."

Kolmer[13], says, "As the case improved, whether under serum treatment or spontaneously, the micro-organisms diminish in number and become intracellular."

When these various statements are analyzed it would appear that if, as Mudd, Lucke and others hold, phagocytosis is a function of the potential charge, then the strains of meningococci found extracellularly may have a higher potential charge than those found intracellularly, and, conversely, those found intracellularly may have a lower potential charge. A quotation from Falk[14], may be pertinent at this point: "I am persuaded that the older notions on virulence and its mechanism have not been fruitful; a new one, which for the moment places the dynamics of electrical potential differences as a focal point between 'virulence' and 'resistance', may not be more sound, but it cannot be more sterile." The

*Potential charge is the electric charge calculated from the formula of Helmholtz and Lamb from the observed velocity of migration of a particle in a measured field and under a known difference of potential. It is considered advisable to express the velocity of migration in terms of μ per second, per volt, per centimetre, since the accuracy of the equation is in doubt.

following is an account of my own researches into this problem.

THE MEASUREMENT OF POTENTIAL

The potential was determined from the velocity of migration with a Northrup-Kunitz micro-cataphoresis cell.

The fall in potential in the cell was determined at the beginning and end of each experiment by the "null" method described by the author[16]. The rate of migration was determined by observing the movement of the bacteria at the "stationary layers", as determined from the formula $\frac{1}{3}\frac{D}{}$ above and below the middle of the cell. Ten readings were made at each level, five with reversed polarity. The impressed voltage was 97+ 1. Since there is some doubt as to the correctness of the Helmholtz-Lamb equation, the results are expressed in μ per second per volt,, per cm., as well as in terms of millivolts.

BUFFERS

Walpole's acetic acid-sodium acetate mixture at pH 5.4 $\frac{M}{1000}$ concentration was used throughout the work. The pH was determined colorimetrically.

AGGLUTINATION METHOD

The macroscopic method as outlined by the Hygienic Laboratories, Washington, was used.

CULTURES

Unless otherwise stated, all cultures were used when 24 hours old. For the determination of rate of migration all cultures were heated at 65°C for 1 hour and washed three times in $\frac{M}{1000}$ acetic acid-acetate buffer without any other salts.

MEDIA

Glucose beef infusion agar at pH 7.6 was used unless otherwise stated.

EXPERIMENTAL

In the early part of the work reported herein it was found that washed suspensions of meningococci in the presence of sodium chloride were very unstable. Various concentrations of salt were used in an attempt to find one which would not cause spontaneous agglutination and yet be sufficient for the ordinary agglutination test, but without success. It was therefore decided that for the first part of this study it would be advisable to suspend all organisms in $\frac{M}{1000}$ acetate acetic acid mixture at pH 5.4 for measurements of velocity of migration.

The points to be particularly noted in Table I are as follows:—

1. Determinations listed under column A were made on cultures which had been carried for several weeks on media with a reaction of pH 6.8. This acid reaction was found to be due to hydrolysis of dextrose by prolonged sterilization. It was therefore decided to add sterile dextrose under aseptic conditions in order to maintain a reaction of pH 7.6. Consequently the cultures used for the determinations in column A had only been transferred once or twice on the new

TABLE I

Potential Difference of Strains of Meningococci

Culture				A		B		B'		C	
N°	Type	Source	Probable Date Isolated	P.D.	μSec V Cm	P.D.	μSec V Cm	P.D.	μSec V Cm	P.D.	μSec V Cm
1	I	H.L.	1917	27.4	1.99	31.7	2.27			32.3	2.32
3	I	Conn.(H.L.)	1917	30.8	2.24	30.6	2.19			28.7	2.06
7	I	N.Y.S.	1916	31.9	2.32	39.2	2.81			38.6	2.77
8	I	N.Y.S.	1918	37.1	2.70	39.2	2.81			38.5	2.76
12	I	H.L.	old	31.5	2.29	39.2	2.81			37.3	2.68
32	I	Chicago	Apl 4/30			40.1	2.87			36.1	2.57
2	II	Conn.(H.L.)	1917			32.2	2.34			30.6	2.19
5	II	N.Y.S.	1916			28.6	2.08			31.6	2.26
6	II	N.Y.S.	1916			33.5	2.44			30.9	2.22
15	II	H.L.	old			23.2	1.69			24.2	1.77
16	II	H.L.	1917			34.9	2.54			35.1	2.52
9	III	N.Y.S.	1916			38.4	2.87			38.5	2.74
10	III	N.Y.S.	1918							37.4	2.67
19	III	H.L.	Dec 16/28			37.1	2.70			38.0	2.71
28	III	Chicago	July 2/30			36.6	2.66	33.8	2.42	32.0	2.28
33	III	Chicago	Apl 1/30					33.6	2.41	31.7	2.26
4	IV	Conn.(H.L.)	1917	30.8	2.24					26.8	1.92
20	IV	H.L.	May 14/28	29.0	2.11					25.6	1.85
21	IV	H.L.	March 28/29	29.3	2.14					28.5	2.04
22	IV	H.L.	May 14/28			30.2	2.20			30.5	2.18
27	IV	N.Y.C.H.D.	June 28/30			36.0	2.62			41.5	2.96
31	IV	Chicago	Apl 29/30			38.2	2.78			36.4	2.60
34	IV	Detroit	July 4/30					41.9	2.99	38.3	2.73
38	?	Kingston	July 21/30 Case					38.9	2.77	34.8	2.48

XUM

media. Those determinations listed under columns B, and C, were made ten days to a month later and show close agreement with each other but considerable variation with column A. This point is significant in that it indicates that changes in the media are accompanied by changes in potentials and is in line with Gordon and Murray's contention that the constitution of the media is extremely important.

2. It will be noted, especially in Type IV strains, that those cultures isolated in 1930 have a potential difference (P. D.) of from 36.0 to 41.9, while the old strains vary from 25.6 to 30.5. This fact may indicate measurable difference between freshly isolated and old stock strains of meningococci. This difference noted in Type IV is not found in the other groups, probably because sufficient new strains were not obtainable for comparison.

3. Another fact which is brought out rather strikingly is the great variation in P. D. between strains of one group. This variation is entirely in line with other characteristics of meningococci. It is rather interesting to note that cultures No. 2 and 16, supposed to be the same strain, were obtained from different laboratories and were undoubtedly carried on different media.

Table II presents an analysis of the data in a different manner. It shows that the range in P. D. covered by the old strains of each type show considerable overlapping, but with Types III and I higher than II and IV. Chart 1 further emphasizes this point.

TABLE II.

COMPARISON OF POTENTIAL DIFFERENCE OF OLD AND NEW STRAINS OF MENINGOCOCCI

Old Strains					*New Strains (First Test)*				
Type	*No. of Strains*	*P. D.*			*Type*	*No. of Strains*	*P. D.*		
		Average	*Low*	*High*			*Average*	*Low*	*High*
I.	5	35.08	28.7	38.6	I.	1	....	....	40.1
II.	5	30.5	24.2	35.1	II.	2	35.1	33.6	36.6
III.	3	38.0	37.4	38.5	III.		....	....	....
IV.	4	27.8	25.6	30.5	IV.	3	38.7	36.0	41.9
					?	1	....	....	38.9

Charts 2 to 8, inclusive, present the data in different form and serve to emphasize certain variations. Chart 2 shows the extreme variation between strains of one type and at the same time indicates the tendency to type variation. Charts 3, 4, 5 and 6 are self-explanatory.

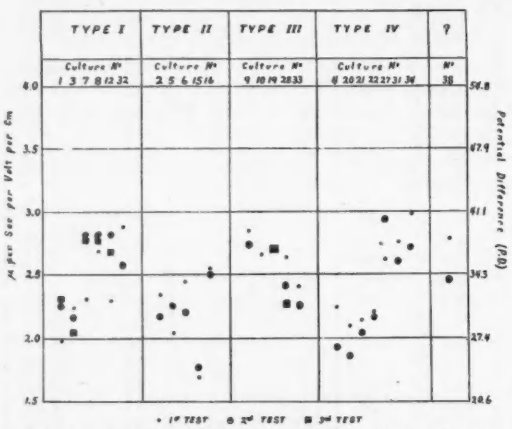


CHART 1.—Graphical presentation of the data in Table I.

Charts 7 and 8 compare the P. D. of strains isolated in July and April, 1930. It will be noted that the P. D. of July strains show a very sharp initial drop after a few subcultures, while April strains are much more stable. Just how significant these data are, is difficult to say, but it is very suggestive that according to determinations of P. D., recently isolated strains have a higher charge and tend to lose it rapidly.

Preliminary investigation has shown that the charge reducing properties of specific antisera are measurable by determining the P. D. of treated and untreated cocci.

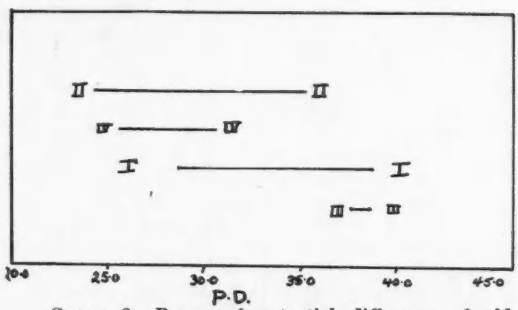


CHART 2.—Range of potential difference of old strains of meningococci (see Table II).

CONCLUSIONS

In conclusion it may be stated that it appears from the work thus far, that the determination of the potential difference (P. D.) of strains of meningococci may open up a new method of attack on the problem of determining their relative

virulence. Evidence has been obtained that at least for Type IV strains, those recently isolated (July, 1930) have a distinctly higher potential than the old stock strains. It is further indicated that the variation within a group of meningococci of one type may be greater than between different types.

The significance of these variations in P. D. and their bearing upon virulence of strains of meningococci and the production of potent antisera is problematic. The fact that there are definitely measurable differences in P. D. is encouraging, especially since it is known that other organisms vary in virulence from one extreme to another.

Certain definite lines of research are indicated:—

1. Extension of the results reported herein.
2. The development of media which will maintain the high charge on freshly isolated cultures.

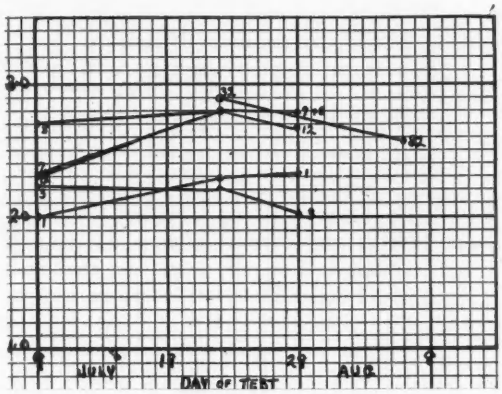


CHART 3.—Type I Meningococci.

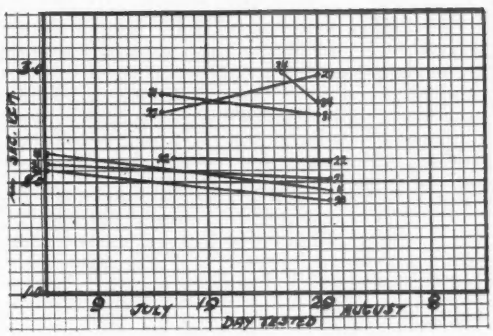


CHART 6.—Type IV Meningococci.

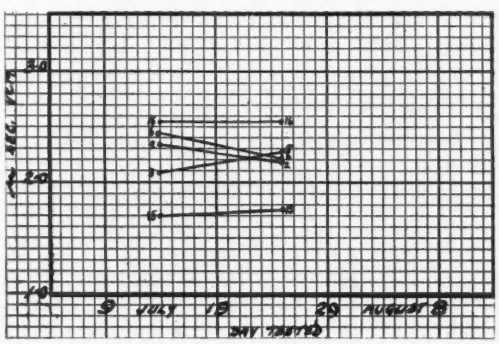


CHART 4.—Type II Menginococci.

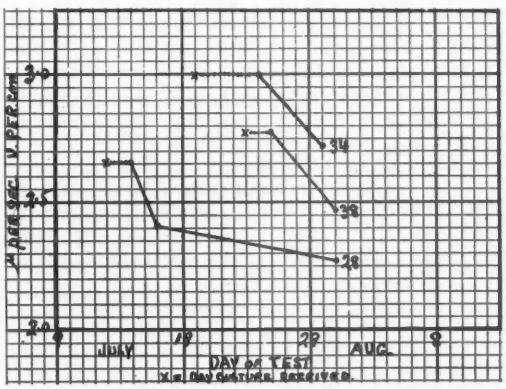


CHART 7.—Meningococci isolated in July.

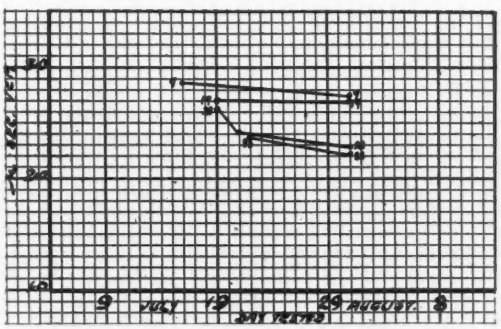


CHART 5.—Type III Meningococci.

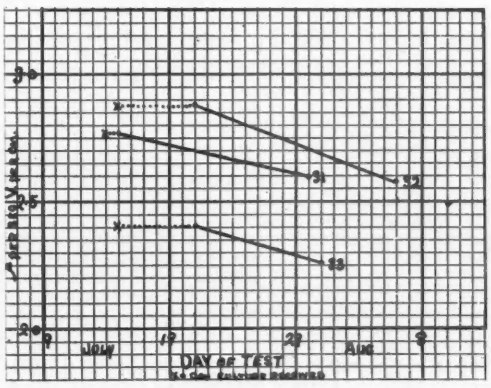


CHART 8.—Meningococci isolated in April.

XUM

3. The determination of the P. D. of strains of meningococci isolated from spinal fluid and from carriers. Notation as to whether or not spinal fluid strains were found extracellular or intracellular should be made.

4. The determination of the phagocytic index of strains with a high charge as compared with those of low charge.

5. The charge reducing effect of various antisera.

6. The production of antisera by the use of strains of meningococci with a high charge and the careful clinical observation of results.

Many other suggestions could be offered but these few will serve to indicate the possibilities in this field of research.

REFERENCES

1. McCOY, U.S. Pub. H. Top., **44**: 1595, July 5, 1929.
2. ROSENAU, Preventive Medicine and Hygiene, Appleton, New York, p. 250, 1927.
3. TOPLEY AND WILSON, The Principles of Bacteriology and Immunity, **2**: 933, 1929.
4. NORTON AND GORDON, *J. Prov. Med.* **4**: 207, 1930.
5. GORDON, Med. Res. Council, Spl. Rep. pp. 50, 65, 1920.
6. *Ibid.*, p. 22.
7. JENSEN AND FALK, *J. of Bact.*, **15**: 367, 1928.
8. FALK, JACOBSON AND GUSSIN, *J. Inf. Dis.*, **37**: 481, 1925.
9. KAHN AND SCHWARZKOPF, *Proc. Soc. Exp. Biol. and Med.*, **27**: 381, 1930.
10. MUDD, LUCKE *et alii*, Colloid Symposium Monograph, **6**: 131, 1929.
11. MURRAY, Med. Res. Council, Spl. Rep., **124**: 13, 1929.
12. HISS AND ZINSSER, A Text-Book of Bacteriology, Appleton, New York, p. 528, 1922.
13. KOLMER, Infection Immunity and Biologic Therapy, W. B. Saunders, Philadelphia, p. 951, 1925.
14. JORDAN AND FALK, The Newer Knowledge of Bacteriology and Immunology, University of Chicago Press, Chicago, p. 575, 1928.
15. MURRAY, A System of Bacteriology, *Med. Res. Council*, **2**: 306, 1929.
16. In Press.

Men and Books

MEDICAL MATTERS IN THE APOCRYPHA*

BY D. F. FRASER-HARRIS, M.D., D.Sc., F.R.S.E.,

London

Much has been written on matters medical and hygienic which are contained in the canonical scriptures, especially on the hygiene of the Pentateuch, but a similarly careful study has not been made of these subjects in the Apocrypha. Yet some of the directions and declarations in "Ecclesiasticus" and in "Wisdom" are more specifically "medical" than even the famous sanitary laws of Moses.

To begin with, the author of "Ecclesiasticus", Jesus, the Son of Sirach, of Jerusalem, speaks with no uncertain voice in praise of the physician. —"Honour a physician with the honour due unto him for the uses which ye may have of him, for the Lord hath created him," (xxxvii., v. 1) so that on a literal acceptation we might claim "the divine right of physicians" on better grounds than crowned heads have claimed the "divine right of kings."

"The physician cutteth off a long disease," we are told in chapter x., v. 10. But these are only the introductions to his high opinions of our profession, for in chapter xxxviii., v. 4, we have—"The Lord hath created medicines out of the earth, and he that is wise will not abhor them." Unquestionably the "medicines" referred to here are herbs and not what we should now call chemical or mineral substances. Therapeutic materials of non-vegetable origin were almost never prescribed before the time of Paracelsus (d. 1541). It is, however, true that in ancient Egypt some mineral substances were used, but mostly for cosmetic purposes.

The salutary effect of a medicine is used as a simile for a faithful friend—"a faithful friend is the medicine of life" (vi., v. 16). The prophylactic aspect of therapeutics is given in a picturesque parallel—"Learn before thou speak, and use physic or ever thou be sick" (xviii., v. 19). We venture to think that this latter aspect of medicines as preventive was not one prominently before even thoughtful people at the date of the "Ecclesiasticus."

Jesus, the son of Sirach, had also respect for the apothecary. He speaks of the art of the apothecary in almost extravagant terms of praise ". . . . . the composition of the perfume that is made by the art of the apothecary; it is sweet as honey in all mouths, and as musick at a banquet of wine" (xlix., v. 1). This simile of music at a banquet is a favourite with the author of "Ecclesiasticus"; he uses it more than once, as we shall see. The value of sound general health is emphasized in several passages. Thus, "Health and good state of body are above all gold, and a strong body above infinite wealth" (xxx., v. 15); and again—"Better is the poor being sound and strong of constitution than a rich man that is afflicted in his body" (xxx., v. 4). Many a rich invalid has said "Amen" to this. Once again—"There is no riches above a sound body" (xxx., v. 16).

*Scholars are not unanimous in regard to the date at which "Ecclesiasticus" in its original Hebrew was written. Some assign it to the third century B.C., others to a century later. The most generally accepted opinion is that it was written by a Jew, Jesus of Jerusalem, whose grandson, Jesus, son of Sirach, of Jerusalem, translated his grandfather's treatise into Greek and added a prologue of his own in that language.

(Cf. "The Books of the Apocrypha," by the Rev. Prof. Ryle, B.D., in "The Cambridge Companion to the Bible," Cambridge, 1894.)

Jesus, the son of Sirach, would, had he lived to-day, have been an advocate of the practice of putting an end to a life of pain. He says (xxx., v. 17): "Death is better than a bitter life or continual sickness." He would certainly have approved of euthanasia brought about by the medical man in certain circumstances and with certain safeguards.

Perhaps the most remarkable single statement is made in chapter xxxix., v. 26, which is: "The principal things for the whole use of man's life are: water, fire, iron and salt, flour of wheat, honey, milk and the blood of the grape and oil and clothing."

We shall be repaid by a close examination of this dietetic catalogue at least as old as the second century before Christ. To show how complete it is from the point of view of modern personal hygiene, let us state what a physiologically correct diet ought to include. It should contain water, protein, carbohydrate, fat, mineral salts, and vitamins. Now it can be shown that all of these constituents are present. As is quite proper, water is mentioned first. Indeed the writer is in no doubt whatever about the physiological pre-eminence of water, for in chapter xxxix., v. 21, he had said, "The chief thing for life is water." This is literally so; no water, no life, as we now know it on this planet.

The next essential constituent of every diet is protein, the nitrogen-containing substance which has no popular synonym. The term "flesh-formers" for the proteins may be used, but this name does not tell all the truth, seeing that, besides helping to form flesh, the proteins contribute also to the production of bodily heat. Be that as it may, in the list before us, the proteins are represented by the flour of wheat and milk, a vegetable and an animal protein respectively.

The carbohydrate recommended is honey or glucose, a most digestible form of sugar, requiring no "inversion" by any ferment before it can be absorbed.

The next essential "proximate principle" in a diet is fat, represented in this ancient catalogue by "oil." Doubtless "oil" here refers to a vegetable oil and almost certainly to olive oil, for the eating of animal fat was forbidden by the law of Moses. Leviticus, (chapter iii., v. 17), is quite explicit on this point—"That ye eat neither fat nor blood." The passage in Nehemiah (viii., v. 10) in which the people were told that they *might* eat the fat is evidence of a relaxation of this prohibition at a time of exceptional national rejoicing—"and he said unto them, go your way, eat the fat and drink the sweet . . . for this day is holy unto our Lord, neither be ye sorry, for the joy of the Lord is your strength."

We now come to the mineral constituents which are absolutely essential in every dietary. Here they are represented by "salt" and "iron." The "salt" presumably is "common" salt (sodium chloride), but the "iron" constitutes a difficulty. It can scarcely be metallic iron, nor can Jesus, the son of Sirach, have known anything of the organic compounds of iron so necessary for the upbuilding of the hæmoglobin of blood. It is certainly remarkable that iron should be mentioned in a dietary drawn up about 2,000 years ago, for that element is essential in food, and it is the very substance which is deficient in milk when that liquid is used exclusively as nourishment for human beings.

But there are yet other features of modernity in the dietary of "Ecclesiasticus" for, all unconsciously, its author supplies us with the four vitamins still provisionally called A, B, C, and D. Vitamin A, necessary for the growth of the body, is present in cream, and cream has been provided in the milk. Vitamin A is the fat-soluble, growth-promoting vitamin found in eggs, cream, and cod-liver oil. Vitamin B, not present in white flour, is, however, found in many kinds of fruits, including grapes.

In this two-thousand-year-old menu we find the words, "blood of the grape," which are not to be taken as equivalent to wine, because if wine had been meant wine would have been named. "Blood of the grape" is the juice of crushed grapes before fermentation has set in; and even if yeast gains access to the juice and fermentation sets in, the vitamin B is still provided for because it is present to a notable extent in yeast. But grapes also contain vitamin C, the substance responsible for preventing the appearance of scurvy. Milk too contains a little of it.

Lastly as regards vitamin D, it does not need to be specially provided for in a country like Palestine or Egypt where bright sunshine is abundant, for it is the vitamin produced in the living body through the agency of the ultra-violet radiations of sunlight.

There are still "Fire" and "Clothing"; obvious, and perhaps indeed superfluous, but added nevertheless by our early hygienist if for no other reason than that of completeness in his catalogue. "Fire" to cook the food, and "clothing" to preserve the bodily heat from escaping in cold weather as well as to prevent the undue entrance of solar heat in warm weather. A very remarkable list for 200 B.C.!

But the physiological wisdom of Jesus, the son of Sirach, is not by any means exhausted; he has yet to show us the value of wine as an adjunct to food. No advocate of temperance at the present day could preach the doctrine of moderation in drinking more effectively than this far-away author who was contemporary with the Maccabees, Philip of Macedon, Jugurtha, Plautus, Terence, and Menander.

Thus in chapter xxxi., v. 27, he says: "Wine is as good as life to a man if it be drunk moderately; what is life, then, to a man that is without wine? for it was made to make men glad." The proper psycho-physiological influence of alcohol is here recognized with the implication of "nothing in excess." But there is much more in the same strain, for, like all

XUM

Orientals, this author can express the same idea in many more ways than one.

"Show not thy valiantness in wine, for wine hath destroyed many," he says in chapter xxxi., v. 25. He goes on—"Wine measurably drunk in season bringeth gladness of the heart and cheerfulness of the mind" (xxxi., v. 28), "but" (v. 29) "wine drunken with excess maketh bitterness of the mind with brawling and quarrelling," and further he declares, "drunkenness measureth the rage of a fool till he offend, it diminisheth strength and maketh wounds" (xxxi., v. 30). The physiology of all this is notably familiar.

The way in which this ancient Hebrew author recognizes the power of music to make for cheerfulness, and therefore better health, is very striking. Three times he tells us that music and wine are a delightful combination. The physiology of the beneficial effects of pleasant surroundings as related to eating has been worked out only so recently as in our own day by the Russian physiologist, Professor Pavlov, but this writer, two hundred years before Christ, knew something about the tonic effect of pleasant surroundings as conducive to sociability and, therefore to improved digestion. Thus he says, "wine and musick rejoice the heart" (xl., v. 20); "a concert of musick in a banquet of wine is as a signet of carbuncle set in gold" (xxxii., v. 5); and again, "as a signet of emerald set in a work of gold so is the melody of musick with pleasant wine" (xxxii., v. 6). It is noteworthy that he speaks of the "*melody* of music"; and he likens the pleasure-giving effects of wine and music to sensations derived from the contemplation of rich jewellery—a very unusual kind of comparison.

But we have not yet come to the end of his physiological wisdom. He has a recommendation for enforced gluttony which is sound commonsense:—"And if thou hast been forced to eat, arise, go forth, vomit, and thou shalt have rest" (xxxi., v. 21). As is well known, his Roman contemporaries practised this method of voluntary emesis, but for exactly the opposite purpose, namely to permit of continued gluttony.

Our author is wholly against excess, not so much for reasons of morality and etiquette as on physiological grounds. Thus he writes (xxx., v. 15-19) " . . . . be discreet in every point. Eat as it becometh a man those things which are set before thee, and devour not lest thou be hated. Leave off just for manners' sake, and be not unsatiable, lest thou offend. A very little is sufficient for a man well nurtured, and he fetcheth not his wind short upon his bed."

The author of "Ecclesiasticus" seems to understand what, in modern language, we should call differences in the nourishing value of various foods which nevertheless are equally digestible. The verse is: "The belly devoureth all meats and yet is one meat better than another" (xxxvi., v. 18). Whether "better" be taken to mean more digestible or more nourishing, the statement is a dietetic fact.

In verse 19 of chapter xxxvi a curious physiological comparison is instituted—"as the palate tasteth divers kinds of venison, so doth an heart of understanding false speeches." The faculty of distinguishing true from false utterances, genuine from merely flattering, is compared to the capacity of distinguishing the tastes of various kinds of meat. Certainly an unusual, but again a perfectly valid, physiological comparison.

The physiology of sleep, as expressed in "Ecclesiasticus" has quite the modern ring—"Sound sleep cometh of moderate eating; he riseth early, and his wits are with him, but the pain of watching and choler and the pangs of the belly are with an insatiable man." (xxxi., v. 20)—another condensed homily on the wisdom of moderation in eating. The eupeptic sleeps well, rises early, refreshed and with his mind clear, whereas the man who has eaten too much is liable to have disturbed sleep from colic and indigestion.

The psychic and sensory factors inducing insomnia are those referred to in chapter xxvi., v. 2: "Watching care will not let a man slumber, as a sore disease breaketh sleep."

The exhilarating effect of the contemplation of beauty, especially that of the female by the male, is referred to in chapter xxxvi., v. 22: "The beauty of a woman cheereth the countenance, and a man loveth nothing better," which is exactly the same reaction as that described by W. S. Gilbert in the well-known lines—

"When a man's afraid
A beautiful maid
Is a cheering sight to see,
And, oh, I'm glad
That moment sad
Was soothed by sight of me."

A MEDICAL BIOGRAPHY OF THE BOND-FARISH FAMILY

By G. W. T. Farish, M.D.,

Yarmouth, N.S.

In compiling a brief history of the Bond-Farish family, I am going back to the year 1685, when, in England, Sir William Bond was born and lived. He was not of the medical profession, but evidently admired it so much that he educated his son William to this end. Then came Sir Thomas Bond, M.D.; following him Stephen Bond, an M.D., and his son James Bond, also educated for the art of healing.

I know little of these gentlemen, more than to say that they lived in England and evidently practised their profession there.

So far as Yarmouth is concerned, we begin with Joseph Norman Bond, eighth son of Dr. James Bond, of England. He was born in 1758 at Weston, in Cheshire. In 1779 he had evi-

dently completed his medical education, for he was appointed surgeon in Lord Cornwallis' army and was present at the surrender at Yorktown in 1781. I happen to be in possession of the mahogany chest in which he kept his medicine and surgical armamentarium. In 1782 he journeyed to New York, and in the following year left that city with other Loyalists for Shelburne, N.S. In 1785, he married Elizabeth Bell, daughter of Joseph Bell, also a Loyalist. Not finding Shelburne to be all he desired, he removed to Yarmouth and at once became a useful member of the community. For twenty years he was the only resident physician in what is now known as Yarmouth Co.

One cannot imagine how it would be possible for him, being the only resident medical practitioner, to devote his time to any outside branches of work, but we find him busy in other respects, as he held many public offices. In 1787 he was appointed to the post of Collector of Customs, which duty he performed for thirty years. In 1792 he was appointed Deputy Sheriff. In 1802, the Nova Scotia Government appointed him a Commissioner and Trustee for the building of the first bridge over the Tusket River. In 1804 a Justiceship of the Peace was bestowed upon him. In 1806 he was one of the pioneers in the establishment of Trinity Church at Yarmouth and for thirty years was one of its wardens. In 1830, two months before his death, he became a member of the association for building the first Yarmouth academy. All the parchments which were presented to him covering these different offices are in the possession of his granddaughter, now ninety-two years of age.

Dr. Stephen Norman Bond, brother of Dr. Joseph N. Bond, was prepared to follow in his father's footsteps, and chose the medical profession. He practised for a short time in England, but ill health compelled him to relinquish his calling and he died in 1821 at a comparatively early age.

It was Dr. Stephen who was a great friend of the renowned Dr. Jenner, of cowpox fame, and he obtained some of the vaccine lymph from Dr. Jenner and sent it to his brother in Yarmouth. Such faith had he in the new discovery that he tried its effect on his own son, an infant at the time, and it proved so successful that he at once introduced it into his practice with great success.

Dr. James Bond, born in 1786 in Shelburne, son of Joseph Norman, was born in England and practised his profession in Yarmouth until 1839, when he relinquished it in favour of his younger brother Dr. Joseph B. Bond, and accepted the position of manager of the first bank in Yarmouth. The next child, Sarah Bond, married H. G. Farish, and this is where the Bonds and Farishes become connected in the genealogical tree. Norman Bond, M.D., another brother of Dr. James, was born in 1795. He practised for a few years at Digby, N.S., but ill health obliged him to give up and he died in 1821.

Then came Joseph Blackburn Bond, M.D., who, when his brother took up the position as manager of the Bank, carried on the practice. Another daughter, Maria Bond, married George Bingay who practised for a number of years in Boston and Westport, Digby Co.

Now we will return to the point where the Farishes connect up. The first doctor by that name was Dr. Henry Greggs Farish. He was born in Brooklyn, N.Y., while the British flag was still flying in the year 1781. The records say "The British flag was flying over the house and a sentry guarding the door." His father and mother died when he was a comparatively young man, and he took up the study of medicine with a Dr. Perry, a great friend of his father's, and when very young, as a matter of fact when seventeen years of age, he attended Dr. Perry through a long illness. After Dr. Perry died, Col. Hamilton, the British Consul at Norfolk, Va., obtained an appointment for him on board of *H. M. S. Asia* as surgeon or assistant surgeon, and subsequently on the *Cleopatra*. After peace was declared, he was returned to England, and whilst there looking for some position he met Dr. Joseph Norman Bond, who had taken over his eldest son, Dr. James Bond, to be educated. As a result of this meeting he was invited to come to Yarmouth as Dr. Bond's assistant. After five years he joined Dr. Bond on equal terms, and eventually married his eldest daughter. When Dr. Bond relinquished his practice he continued on and died in 1856, after having practised fifty-four years.

He, as well as Dr. Bond, held many other important positions in the community, *viz.*, Collector of Excise, Postmaster, Registrar of Deeds, and the high and honourable position of chief magistrate, and, as the records say, "presided over the Bench at their meetings with firmness and decision."

Three sons were born to Henry Greggs and Sarah Farish, *viz.*, Greggs Joseph, James Collins and Henry Greggs second, all of whom were educated for the medical profession.

Greggs Joseph Farish, the eldest son, was born in 1809 and died in 1881. He practised in Yarmouth for forty-six years, and, becoming tired of the medical profession, accepted the position of Inspector of Schools for the County of Yarmouth and, possibly, of Shelburne. He was an M.D. of the University of Pennsylvania, and M.R.C.S. of London, being Gold Medalist of his class.

James Collins Farish was born in 1811 and died in 1889. He was a University of Pennsylvania graduate and also M.R.C.S. He practised in Yarmouth for fifty odd years. Those who remember Dr. James, or as he was familiarly called by some of the country folk "Dr. Jimmie", often speak even to-day of his style in the saddle, with his flowing frock coat and high hat, and as straight as a rush.

XUM

Henry Greggs Farish, the third son, was born in 1825 and died in 1914, at the ripe old age of eighty-nine. He graduated at Philadelphia and subsequently went to London, where he took his M.R.C.S. diploma. His father sent him to Liverpool, (N.S.) where he remained for sixty years in continuous practice. Some years before he died he wrote a very interesting paper, which was read at a meeting of the Nova Scotia Medical Society at Yarmouth, on his sixty years' practice in Queen's Co.

He was survived by three sons, two of whom adopted the medical profession, *viz.*, G. W. T. Farish and J. C. Farish. The former still holds sway at Yarmouth, and the latter has for the past fifteen years been located at Vancouver, B.C., as a specialist in the Eye, Ear, Nose and Throat.

At the present time the name of Farish in medicine has been continuous in Yarmouth for 127 years.

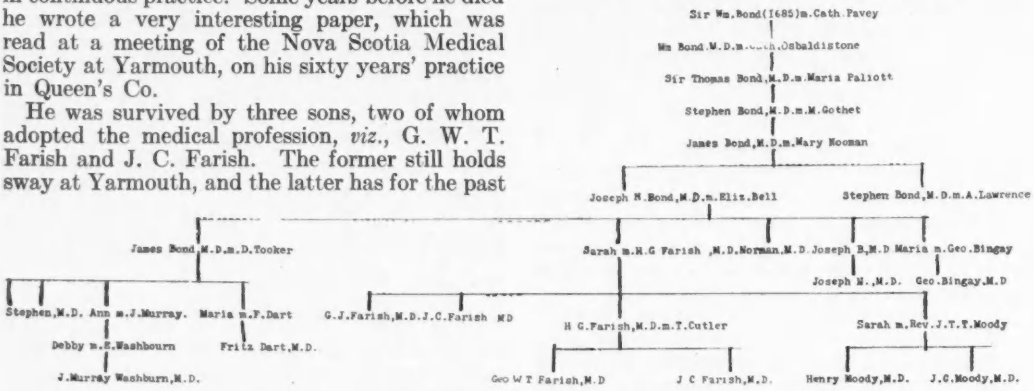
To return to the Bonds. We find that Dr. J. B. Bond had a son, Dr. Joseph Norman, who had a varied career. After graduation he practised in Yarmouth for a short time, and then went back to England. Finding his health failing he sought a dryer climate, and eventually went to Iowa, U.S.A., where he practised until his death in 1894.

Dr. James Bond had a son, Stephen, who took up the medical profession, but did not live very long to enjoy his life; also two daughters, Ann and Maria. Ann married James Murray, and had a daughter, who had a son, Dr. J. Murray Washburn, now of Chicago. Also Maria married Fred. Dart, and had a son Fritz Dart, now practising in Baltimore.

Sarah Farish was my father's sister. She married the Rev. J. T. T. Moody, for many years rector in Yarmouth, and bore two sons who both chose medicine as their life's work, Dr. Henry Moody and Dr. James Moody. The former practised in Richibucto, N.B., until his death and the latter at Windsor, N.S.

This is the end of the Bond-Farish record. There are none to follow, so the history ends, unless Dr. Washburn and Dr. Dart have possibilities for the medical profession. Dating from Dr. William Bond, there have been twenty-one doctors in the family up to the present, as can be seen from the family tree appended herewith.

PEDIGREE OF THE BOND AND FARISH FAMILIES



CORRECTION

In referring to the copyrighting of Osler's Text-book in Great Britain, Dr. W. W. Francis has drawn our attention to the fact that the first three editions were copyrighted. It was only in the case of the fourth that this precaution was overlooked.

Medical Societies

REGINA AND DISTRICT MEDICAL SOCIETY

At the annual meeting of the Regina and District Medical Society the following officers were elected: *Honorary President,* Dr. R. McAllister; *President,* Dr. R. Roger; *First Vice-president,* Dr. S. E. Moore; *Second Vice-president,* Dr. P. L. Straith; *Secretary,* Dr. Howard Sieg; *Treasurer,* Dr. H. M. Graham. On the Executive will be Drs. J. B. Ritchie, E. B. Alport, C. M. Henry, E. A. McCusker, and Urban Gareau.

SOUTH WATERLOO MEDICAL SOCIETY

The annual meeting of the South Waterloo Meidcal Society was held at Galt on September 26th, when the following officers were elected:—*President,* W. G. Hutchinson, Hespeler; *Vice-President,* C. Reist, Preston; *Secretary,* John G. Seaton, Sheffield; *Treasurer,* W. L. Catherwood, Galt. Dr. R. V. B. Shier, of Toronto, gave an excellent address on "Surgical diagnosis in the acute abdomen". It was decided to meet monthly and have an outside speaker for each meeting.

WARD WOOLNER

Association Notes

THROUGH WESTERN CANADA

THE STORY OF TOUR "C."

Medical visitors to Canada for the Annual Meeting of the British Medical Association at Winnipeg had a choice of several itineraries. The members who took part in Tour "C," which occupied seven weeks in all, left Liverpool on August 8th and returned to England on September 26th. For the following graphic account of Tour "C," from Winnipeg onwards, we are indebted to a colleague, who, amid incessant claims upon his attention, found time to jot down an informal record of this wonderful journey.

FROM WINNIPEG TO THE PACIFIC

We had an affectionate send-off at Winnipeg station on Friday, August 29th, at midnight. A good many of our hosts were there, including the President and Mrs. Harvey Smith, who, ubiquitous as ever, were determined to see the last of us, and were unfeignedly sorry it was all over. We gave them a cheer as we left. We arrived at Saskatoon, Saskatchewan Province, about 1.30 p.m. on August 30th, and were met by a large contingent of local doctors, headed by Dr. H. E. Munro, President of the Saskatoon Medical Asociation, and, after introductions and the inevitable press interviews and photographs, were taken in small parties on a tour of the city by the doctors. Then we returned to the University, where the doctors' wives gave us tea. The Premier of the province, the Hon. J. T. Anderson, and many prominent public men were there. And let me now say that everywhere we have been the Association has been treated as a great Imperial organization, as well as the representative of the good will of the profession in Great Britain for our kinsfolk here. Before we get back we shall have been received by the Premier of every Canadian province, and by many important Ministers, not to mention the mayors of all the cities we visit, and the heads of the universities. In the evening the Saskatoon medical men gave us all a dinner, and a jolly affair it was—speeches short, but full of good will and evident pleasure at our visit. The President of the Saskatchewan Medical Association, the Premier, the Minister of Health, and the Mayor spoke, and our Treasurer, Sir Eustace Hill, and Sir Ewen Maclean replied. Then we went back to the train to sleep. One thing struck us very much wherever we went, and not least in Saskatoon and Edmonton, to which place we went next, and that is the amount of money and attention given to education — university, secondary, and primary. Saskatoon, to take an example, with just over 50,000 inhabitants, has fifteen large and handsome schools, and a really beautiful university, of which everybody is proud. The university at Saskatoon at present only gives a pre-medical education on account of lack of clinical material, but they are full of ambition for the future.

Sunday, August 31st.—On arrival in Edmonton, Alberta, at 9 a.m., we were met by many members of the local Academy of Medicine. Dr. Munro, its president, was absent, but he was represented by Dr. W. A. Atkinson. We were driven to the hotel by the local doctors, who afterwards took us off to see what we would of the city and its surroundings. Edmonton is very prettily situated on the banks of the Saskatchewan River and is built on coal, which abounds, though for want of an accessible market many mines are not worked. Very good shops and buildings, including a really beautiful university, which I had the privilege of seeing along with Professor Muir of Glasgow, under the guidance of Dr. Ower, the professor of pathology. The university buildings are already large, but there is a fine expanse of ground on which further extensions can be made. It gives a complete medical education. The party spent the day in many ways—golf, drives, etc.—and most of us turned up at 4.30 for a reception at Government House. The Lieutenant-Governor, a member of our profession, was away; we saw a good deal of him at Winnipeg, but his wife, Mrs. Egbert, received us, and after tea Dr. Atkinson, in the name of the local profession, and the Mayor, Mr. J. M. Douglas, and the Attorney-General, the Hon. J. F. Lymburn, welcomed us, and I responded. Hotel for dinner; a fine exhibition of aurora borealis turned on for our benefit as we left; slept on train. I should mention that the Canadian National Railway very kindly detailed two of their chief medical officials to take the journey with us to Vancouver and dispense hospitality, which they did in a charming fashion.

Monday, September 1st.—Arrived at Jasper about 8 a.m. and were driven out to Jasper Park Lodge for a day of relaxation; no reception, no speeches—quite unusual. The Jasper Park is a national park of 5,200 square miles extent, with every kind of beautiful scenery—rivers, lakes, mountains, glaciers, wild animals. A real place of rest and (I understand) a golf course

XUM

beyond compare for beauty. Back to the train, where we shall be until we arrive at Vancouver, going on at once to Victoria. All the next day was spent in travelling among the Rockies, the scenery of which has not been overpraised.

British Columbia

Wednesday, September 3rd.—We arrived at Vancouver and immediately got aboard the boat for Victoria. We were met by Dr. Kenning, president of the Victoria Medical Society, Dr. Thomas, secretary of the Arrangements Committee, Dr. A. B. Nash, Dr. Scott Moncrieff, Dr. Clearihue, and Mrs. Kenning and Mrs. Thomas, who, in co-operation with the C.P.R., had made splendid arrangements for our comfort. They registered us, gave us invitations to various functions, and also arranged for the numbering of our luggage according to hotel rooms. This saved an immense amount of time and trouble, for we were due very shortly after our arrival at the house of the Lieutenant-Governor, who gave us a garden party. The Governor received us very kindly, accompanied by several ladies and his aide-de-camp, and he had a body of pipers whose music appeared to be greatly appreciated by many of our party. We were taken to and from the house in the cars of the local doctors. At 7.30 a dinner was given to the whole party, as well as to the visiting members of the Pacific Coast Oto-Ophthalmological Association. We were welcomed by Dr. Kenning, who was in the chair, followed by the Attorney-General on behalf of the Government and by the Mayor. Dr. Brackenbury replied. Afterwards the party went over to the adjacent Crystal Garden, where there was dancing and an exhibition of swimming.

Thursday September 4th.—Some members went golfing (golfers have been splendidly provided for everywhere); others went to hospitals and various institutions, and a large number were taken for a drive round the justly celebrated Malahat Drive, which gave us an opportunity of seeing much beautiful country, more like home than anything we had seen yet, and many glimpses of the Pacific Ocean. In the afternoon there was a garden party given by Mr. and Mrs. R. P. Butchart at their beautiful home and garden—abundance of flowers, lovely garden planning, and charming hospitality. This evening the party was split up. We had a men's medical dinner of a very informal character, at which Dr. Kenning, after calling on the selected speakers—Sir Kenneth Goadby and Sir William Taylor—called on Sir Ewen Maclean, Mr. Comyns Berkeley, Sir James Purves-Stewart, Dr. Harvey Pirie of Johannesburg, and myself to say a few words. The ladies had a dinner with the local ladies, and the juvenile members of the party (of whom there are quite a number, and who are the most popular of us all) had a party to themselves. Weather perfect. Professor Burgess addressed the joint Canadian and Rotary Clubs to-day, with great acceptance, before a full house, on "radium," a very live question in Canada. Mr. Bishop Harman addressed the Oto-Ophthalmological Association of the Pacific Coast on "The control of trachoma," and had a fine reception and many questions.

Friday, September 5th.—We reached Vancouver again this afternoon. Unfortunately, the weather was very misty, so again we lost much of the beauty of the passage from Victoria. We were met at the station by a band (a delicate attention on the part of the Corporation), and were at once transferred to the Empress Hotel. At 8 a dinner was given to the whole party by the Mayor and Corporation; this was a cheery affair, the Mayor making a very racy speech, and the Treasurer and Sir James Purves-Stewart being in extremely good form in replying. Alderman Dr. Fraser also spoke on behalf of both citizens and doctors. The next day the Vancouver profession apparently took a day off to be kind to us. Some of the party, as usual, went to golf, and I am desired by the keen golfers to say that their reception everywhere has been almost embarrassing in its kindness. Many went for an all-day sailing expedition, which touched at several places of interest—lumber cutting, copper mines, etc. Others went for excursions round the town, being taken mainly in the cars of our local colleagues. Dr. J. F. Strong, President of the Vancouver Medical Association, Dr. Murray Blair, secretary, and Dr. Vrooman, among many others, were specially prominent. At night there were three entertainments provided: for men, for ladies, and for the younger members of the party. I had a long talk with Dr. Macdermot, who had been specially detailed by the local profession to study the question of health insurance, which is thought to be imminent in the province. It was evident that he had employed his time well.

Eastward from Vancouver

Sunday, September 7th.—We left on our eastward journey through the Rockies. I shall not attempt to depict the scenery through which we passed. Is it not all written in various publications of the C.P.R.? But one can say with truth that the grandeur of it all has not been exaggerated. The C.P.R. kindly sent their chief medical officer, Dr. A. P. Proctor, with us to Field, the border town of the province. We spent all day and all night on the train, and travelling is quite comfortable when one gets used to the compartments and has learned to avoid hitting one's head on the upper bunk.

Monday, September 8th.—We got out at Field and took motor charabancs to Emerald Lake,

which does not belie its name. By a peculiarly delicate attention on the part of Nature the lake is overhung with mountains, one of the biggest being Mount Burgess, which appropriately is in the President Range. And here we are at Lake Louise for the night on our way to Banff. Dr. Mackid, of Calgary, a chief medical officer of the C.P.R., turned up to welcome us and to tell us of the preparations for our short visit there on Thursday, of which more anon.

Tuesday, September 9th.—Went on by motor through the Rockies, still increasing, if possible, in grandeur, to Banff, which was reached about 5.45, and immediately had a photograph of the whole group taken. This is an enormous hotel, magnificently appointed, with hot springs, ordinary and sulphur.

Wednesday, September 10th. — There have been the usual golf and excursions to-day. Into them I need enter no further than to say that everybody was excellently catered for. To-night we have had a little gathering, which, while very cheerful and indeed enthusiastic, partook somewhat of the nature of a farewell, as Dr. Routley and his wife return direct to Toronto to-morrow, and Dr. and Mrs. Adamson remain on at Banff for a few days' well-earned rest. We all felt that their work for the success of the meeting, and their exceedingly pleasant personalities should receive some recognition, so two letters of appreciation were prepared, which every member of the party signed. Richly they deserved anything we could do for them, for they had done so much for us. Along with the letters we presented to each an enlargement of the group of the party, and to Mrs. Adamson and Mrs. Routley necklaces. The whole thing had been kept from the recipients, and they were evidently moved and delighted with this recognition of their work, and not less with the hearty applause which greeted them. Dr. Brackenbury took the chair, Sir Ewen Maclean seconded his remarks, both of them expressing neatly what was in all our minds, and Mrs. Brackenbury made the presentation to the ladies. Dr. Adamson made a very witty speech in reply; Dr. Routley followed in a more sober strain, but was impressive in his words of gratitude, as he is in everything he says on such occasions. Then Professor Burgess presented some cigars to Mr. Alan Burke of the C.P.R., who has, together with Mr. P. K. Reynolds, fathered us all since the C.P.R. took charge. Mr. Reynolds came with us from London, and there will be an opportunity of showing our regard for him on the boat, but Mr. Burke leaves us at Montreal. He was evidently as pleased with this expression of our good will as all of us were to show it. A most successful meeting.

Thursday, September 11th.—We went on to Calgary, where, despite the shortness of our stay — four hours — the municipality and the local doctors had arranged a varied program for us. We were taken by local doctors in their cars for a run round the city, a thriving place of over 100,000 population, showing many signs of ambition and progress. Then we were taken out to the ranch of Mr. Patrick Burns, a man of national reputation, where we were given a rodeo on a small scale, with buck jumping and calf lassoing. The cowboys—and girls—in all varieties of wide-brimmed hats, various coloured shirts, and marvellous riding breeches; the girls with silk stockings, which struck me as a bit of an anomaly. After this we were brought back to Calgary Station. We were indebted to Dr. Williams, the president of the local medical association, to Dr. Eneas McCormick, and Dr. Mackid, for the arrangements, in which the whole local profession cordially co-operated.

Friday, September 12th. — We arrived at Regina this morning at 10.30 and spent three hours in the city. We were greeted by Dr. Macalister, president of the Regina Medical Society, and his colleagues, who with their cars took off the whole party to see the city, winding up at the Legislative House, where we were entertained to a buffet lunch by the city authorities. The Premier, the Minister of Health (Dr. Munro), and the Deputy Mayor, spoke words of welcome, and Professor Burgess replied. This was the last occasion for public speeches in which the whole of Tour "C" is concerned, and many of us feel that we have had our full share of speaking, though nothing could be kinder than the spirit which has inspired all the receptions. The principle on which we have gone is to put up one of our official four whenever an official welcome was given, adding one or more of our other members when more speeches were asked for. I am closing this letter at Winnipeg, where I, with some twenty-eight others, have left the rest of the party, who are going on via the Great Lakes to Toronto. We depart to-morrow for Minneapolis, Rochester, Chicago, Philadelphia, and New York, rejoining the others at Montreal on the 19th. All the party are well and happy. —Dr. Alfred Cox, in *Brit. M. J.* **2**: Supp. 155, Oct. 4, 1930.

ON TO ENGLAND

Many members of the Canadian Medical Association are going to be interested in this announcement.

In July, 1932, the British Medical Association will celebrate its centenary in London, under the presidency of Lord Dawson of Penn. Unquestionably, this will prove to be the greatest medical convention that has ever been held in the British Empire.

XUM

Acting upon a very cordial invitation received from the British Medical Association, the Canadian Medical Association has decided to organize the largest possible delegation from our country to the meeting. To that end we are now planning,—hence, this foreword.

It is quite too soon to announce more than a tentative plan, but if our members and their families and friends in sufficient numbers undertake to go a very attractive trip will be arranged. It is suggested that we put out to sea following the close of our own annual meeting of that year (we shall likely meet in Toronto); that we tour the British Isles for two or three weeks prior to arrival in London, and that the return journey be commenced soon after the London meeting, for those who find it necessary to return home at that time. Special arrangements can be made for those members of the party who desire to remain longer in the British Isles, or who care to proceed to the Continent.

The cost depends a good deal upon the size of the party. For your information, we may say with regard to the Britishers who visited us this year, that a seven weeks' trip from home to Vancouver and Victoria and return cost less than $900.00 per person, on an all-expense tour which included everything but tips. If we can make up a party of two hundred, or thereabouts, equally attractive rates can be arranged, depending upon the duration of the trip.

At this time, we merely wish to know how many of our members are interested in the proposal, in order that we may commence to plan for the pilgrimage. And, please rest assured that a right royal welcome awaits the Canadian delegation in every part of the British Isles that may be visited.

Without incurring the slightest obligation, members interested are asked to communicate with the General Secretary at 184 College Street, Toronto, indicating the number (wife, children, etc.) that would likely be included in your party.

Hospital Service Department Notes

NEW HOSPITAL ADVISORY SERVICE ON CONSTRUCTION

It is with great pleasure that the Department of Hospital Service is permitted to call to the attention of our readers who are members of hospital staffs the inauguration of a new service by the Department of Pensions and National Health, whereby Canadian hospitals may obtain gratuitous advice on the many architectural problems associated with hospital construction. This development will be known as the "Division of Hospital Advisory Services."

The Director of this Division is Mr. B. Evan Parry, M.R.A.I.C., the well known supervising architect of the Department of National Health, Elgin Building, Ottawa. He has been a close student of hospital construction for years, is thoroughly familiar with the peculiar problems of this highly specialized field of architecture, and, has been associated with the construction of many hospitals throughout Canada. He is also the author of an excellent booklet "Planning of Small Community Hospitals," which has proved most useful to many building committees. Mr. Parry has been advisor on architectural problems to our own Department of Hospital Service since its inception.

The development of this division by the government of Canada now rounds out the advisory service furnished by the Department of Hospital Service of the Canadian Medical Association. The latter Department has been able to furnish to hospitals in ever increasing extent information on problems of organization, of administration, of equipment, of the relationship to the community, and other data, but it has been felt for some time that thoroughly competent advice on the details of hospital construction could be best given by a fully qualified architect versed in hospital needs. Our advisor, Mr. Parry, has given most unselfishly of his time and knowledge, but we have hesitated to impose too much upon his generosity. With the creation of this new division, Mr. Parry's services will be more readily available to any hospital in Canada as a consultant on construction.

The two bureaux, the Department of Hospital Service of the Canadian Medical Association and the Division of Hospital Advisory Services of the federal government, will function in the closest co-operation. The service at Ottawa will deal with construction only; that of the Canadian Medical Association at Toronto will deal with the general problems of hospitals, and Mr. Parry, with increased resources at his command, will continue as our advisor on construction. Arrangements have been made between the two offices for the fullest interchange of information and data concerning the hospitals in Canada. This advisory service on construction problems is not designed to replace the employment of hospital architects, but to provide, free of cost, expert advice which will be available

All communications intended for the Department of Hospital Service of the Canadian Medical Association should be addressed to Dr. Harvey Agnew, Secretary, 184 College Street, Toronto.

to both building committees and to architects, advice which should prove invaluable in the early stages when the preliminary plans are being considered and in the preparation of the final layout when the detailed knowledge of a hospital expert is desired.

Our Department of Hospital Service wishes to congratulate the Honourable, the Minister of Pensions and National Health, upon the inauguration of this much needed Division, and we wish to express to Mr. Parry our appreciation of this opportunity to more fully utilize his services for the hospitals of Canada.

ARE ACOUSTICAL MATERIALS A MENACE IN THE HOSPITAL?

There has been a general feeling among the hospital administrators, doctors, and architects that the various substances used in acoustical treatment, such as porous plasters, soft organic felts and fibres present a potential menace as an abode and breeding place for germs and bacteria.

Interesting information on this subject is presented in an article by the well known acoustical engineer, Charles F. Neergaard, in a recent issue of "The Modern Hospital." He reports a study made in the bacteriological laboratories of Yale University to ascertain (1) to what extent bacteria penetrate into the substance under test when applied by direct application (as with a brush) or by droplet deposition (as with a spray); and (2) and to what extent bacteria so applied remain viable on the surface and within the texture of the materials. Various well known acoustical materials were studied, such as "Acousti-Celotex," large tiles made of compressed sugar cane fibre and drilled with one-quarter inch holes; two types of "Nashkote" (1) acoustical felt covered with muslin, and (2) hair felt covered with perforated oilcloth; and also with "Savinite", a porous acoustical gypsum plaster, very similar to a gypsum plaster manufactured in Canada.

The studies were made with the non-pathogenic *B. prodigiosus*, which was selected because of the relative ease of its cultivation and identification. The original intention to make studies with pathogenic organisms was dismissed because of the difficulty of cultivation and identification of these organisms in the presence of non-pathogenic bacteria.

As a preliminary, special experiments were conducted to ascertain whether or not materials under test exerted any bacteriostatic or germicidal action. Sterilized samples were used and in this case pathogenic organisms, streptococcus, pneumococcus, *B. diphtheriæ*, *B. typhosus* and also *B. prodigiosus* could be satisfactorily used for the experiments. A suspension of agar-grown *B. prodigiosus* was applied in a thin film by means of a camel's hair brush upon the surface of the materials. The test sections were cut into four equal layers, parallel to the outer surface, to determine the penetrability of the material by the bacteria. Samples were incubated and studied at intervals up to twelve days. The results obtained indicated that when applied by brush the culture is absorbed, the degree of absorption being roughly the same for all the materials, the least active being Acousti-Celotex. The bacteria absorbed into the deeper layers died off more quickly than those on the surface, and by the twelfth day all cultures from all four layers of the five materials were negative.

In order to more clearly simulate room contamination the bacterial suspension was evenly distributed over the samples by spraying with an atomizer for thirty seconds. The results obtained agreed with the preceding experiments.

It is admitted that these data deal with the viability of non-pathogenic organisms and do not directly answer the question of how long pathogenic bacteria can live. However, the tests were undoubtedly made under extremely severe conditions and it may well be questioned whether under natural conditions bacteria deposited upon the surface could penetrate into the deeper layers. There was no evidence of bacterial proliferation, even with a saprophytic *B. prodigiosus*, and there is every reason to believe that the materials composing the samples would provide an even less satisfactory source of food supplied to organisms accustomed to a more highly developed parasitic existence. Moreover, acoustical materials which are usually placed upon the ceiling are not likely to be contaminated to the degree induced in the test, even from the coughing of patients with respiratory tract infections.

The extreme porosity of acoustical materials has given rise to the suspicion that they may harbour bacteria, but, from the bacteriological viewpoint, ordinary plaster walls, in comparison with the microscopic size of bacteria, are also relatively porous. Moreover, ceiling contamination, which may be due to the adherence of bacteria-laden dust particles, is a theoretical rather than a practical danger, as actual observation shows that dust does not enter the porosities of acoustical materials because of the fact that the air spaces contain dead (not moving) air. Most acoustical material used to-day can be cleaned and renovated by brushing, vacuum cleaning, washing, or spraying. Apparently there is very little practical danger from the use of acoustical materials, especially if the room be fumigated when occasion arises.

The author calls attention to the modern conception that prevention of contagion should be regarded as a question of technique, pure and simple. As stated in a bulletin of the American Hospital Association, practically the same technique applied in the isolation ward as is used in the modern operating room reduces cross-infection to a minimum.

XUM

Provincial Association Notes

SIMCOE COUNTY OSLER MEMORIAL MEETING AT BOND HEAD

District Number Five A, comprising the Counties of Peel, York, Ontario and Simcoe, met at Bond Head on Tuesday, September 30th, under the auspices of the Simcoe County Medical Association, and combined the scientific with the sentimental, in the endeavour to do honour to the name of Osler. Judging from the enthusiasm manifested by the very large number present at each and every one of the various celebrations, one feels that the Simcoe County Medical Association has merited the praise of the community and of the medical world at large by its initiative and by its excellent planning of a distinctly unique event. To Dr. Cummings, of Bond Head, to Dr. W. A. Lewis, of Barrie, Counsellor, to Dr. Freel and Dr. Frank Porter, Vice-counsellors, to Dr. A. E. Ardagh and Dr. R. E. Hipwell of Orillia, the presiding officers of the County Society, the admirers of Sir William the world over will tender their heart-felt congratulations and they will wish to compliment them on the attractive and pleasing form which the County's Memorial to the great teacher has taken.

Remembering the fact that Osler was christened in the Church of England at Bond Head, (his father's church), it was suggested that the memorial take the form of a stained glass window placed on the north wall transept, and a beautiful representation of Christ healing the sick now faces the entrant to the little country church, while upon the adjoining wall a brass tablet gives the details of Sir William's life as he passed across the world stage in his kindly and yet compelling way. The workmanship and design of both window and tablet leave little to be desired, and the Simcoe County Medical Association has left in them a pleasing monument for our gratification. A simple and impressive service conducted by the Lord Bishop of Toronto preceded the formal part of the presentation and dedication of the window and tablet: assisting the Bishop were the Reverend C. R. P. Hearn, the rector of Bond Head, and the Rev. A. P. Kennedy, rural dean of the district.

Following the short Church service, Dr. Cummings, of Bond Head, sketched briefly and well the career of the little boy who was born in Bond Head and who left there at the age of nine to begin his wandering through the world. He then presented the window and the tablet to the Church at Bond Head on behalf of the Simcoe County Medical Association. Miss Betty Gibbons, a great-niece of Sir William, unveiled both the window and the tablet, after and a grand-daughter of Sir Edmund Osler, which the ceremony of dedicating these gifts to the Church and to the Glory of God was conducted by the Bishop, who at the same time recounted briefly to the audience his associations with Sir William in the latter's Montreal days, and touched upon details in the life of the man whom the profession and others were assembled to honour. Leaving the Church after an inspection of the tablet and window, that part of the audience more particularly interested in the scientific part of medicine adjourned to the weather-beaten old frame structure below the cross-roads, where the Orange Order for so many years has carried on an active existence. It will be remembered in this connection that Sir William having been born on the twelfth of July was always the little Prince of Orange to this very protestant community. A regular performance on Orangeman's day at Bond Head was to have the Orange procession march through the churchyard to the rectory, in order to salute the young King William who would be seen holding a bunch of orange lilies, or who might at times even be found draped in the yellow scarf of the order.

The afternoon program consisted of addresses by Dr. Fraser Gurd, of Montreal, Dr. Norman Gwyn, of Toronto, and Dr. L. J. Austin, of Kingston.

In speaking of "Modern methods in the treatment of carcinoma," Dr. Gurd described his visit to the various centres in Europe, investigating particularly the influence of radium upon cancer in its various situations in the body. His description of the clinics at Stockholm and at "Barts" attracted most attention, while his plan for the organization of a radium clinic gave one an excellent idea of what is being done to combat the ravages of cancer.

In discussing the "severe anginas of Osler's time and identifying some of them with the coronary thrombosis of to-day" Dr. Gwyn gave more particularly the viewpoint of the elder clinicians,—Osler, Sir Clifford Allbutt and Sir James MacKenzie—and pointed out that to all of them sudden death was the usual manifestation of coronary thrombosis, and that they had all seemed to possess the idea that coronary thrombosis was to be looked at as an end result of an unusually severe angina.

Dr. L. J. Austin in speaking of "tuberculosis of the kidney", pointed out the necessity of early diagnosis and the great necessity of calling to one's aid in this disease, the services of some competent specialist in genito-urinary surgery. His address was made doubly interesting by the exhibition of pathological specimens showing the effect of tuberculosis upon the kidneys. In the absence of Dr. Ward Woolner, Dr. Austin, as Vice-president of the Ontario Medical Association, entertained the large gathering of doctors with an amusing résumé of medical conditions as existing in this continent and in England. It was decided at the meeting that a message of sympathy be sent to Dr. Woolner, the death of whose father had prevented him being present at the meeting. The attendance at the scientific part of the day's proceedings was remarkable. At no District Meeting so far held in Ontario has there ever been such a splendid representation of medical men.

Still heading southward, down the old government road, the "main street" in Bond Head, the visitors from far and near sat down at six p.m. to a banquet in the basement of the United Church. The large and enthusiastic audience, after enjoying an excellent supper, listened to the Osler Oration delivered by Dr. Campbell Howard of Montreal, the son of Osler's great teacher and companion. Fittingly introduced by Dr. George S. Young, the speaker of the evening, touched all hearts. Nothing could excel the concise manner in which Dr. Howard brought before the audience the very beautiful picture of the kindly relationship of Sir William to all with whom he came in contact. As had been hoped, Dr. Howard touched briefly on the intimacy between his father, Palmer Howard, and Sir William, and upon the care with which Sir William had supervised the life and education of his old friend's son. Dr. Campbell Howard's oration it is hoped will appear in print and will therefore, not be further commented upon. Following Dr. Howard, Dr. H. A. Lafleur of Montreal who was Osler's first resident physician at Johns Hopkins, spoke of his association with Sir William and of the way in which the great master directed and helped his assistants and associates.

To complete the evening's performance, the Chairman, Dr. Lewis, called upon Dr. Ferguson, of Toronto, and others in the audience for short two minute talks dealing with any encounters they might have had with Sir William on this continent or abroad. Many interesting and amusing incidents were recounted. Before the breaking up of the gathering, the Secretary of the Ontario Medical Association, Dr. T. C. Routley received nominations for the position of district counsellor and spoke of the activities of the Canadian and Ontario Associations, pointing out the many ways in which a proper organization might be shown to be assisting the man in general practice. A vote of thanks was tendered to Dr. Howard for his splendid oration, and Dr. Austin again entertained the gathering with an amusing monologue. The thanks of the audience was tendered to Dr. Lewis, to Dr. Cummings, and to the others who had worked so well in planning the day's performance, after which the meeting was declared adjourned.

N. B. GWYN

ANNUAL MEETING OF DISTRICT NUMBER SIX

The annual meeting of District Number Six, Ontario Medical Association, was held in Peterborough on September 25th. In spite of rather threatening weather, the attendance was large, about 75 medical men from the district being present, several of whom were accompanied by their wives. Meetings were held in the lecture hall of the public library, where an exceptionally interesting program was presented.

The morning session was addressed by Dr. Duncan Graham, Professor of Medicine, University of Toronto, whose subject was the "Diagnosis and treatment of anæmia"; by Dr. D. W. Mackenzie, Genito-Urinary Surgeon, Royal Victoria Hospital, Montreal, on "Renal infections"; and by Dr. W. E. Gallie, Professor of Surgery, University of Toronto, who spoke interestingly on "Injuries of the knee." At 12.30 p.m. the meeting adjourned for luncheon, after which the business meeting was held.

Dr. F. C. Neal, Peterborough, and Dr. George H. Stobie, Belleville, were nominated for re-election as *Counsellor* and *Vice-Counsellor* respectively. Brief addresses were given by the President and Secretary of the Ontario Medical Association, Dr. Ward Woolner, of Ayr, and Dr. T. C. Routley, of Toronto.

During the afternoon session the meeting was addressed by Dr. W. H. Dickson, Radiologist of the Toronto General Hospital, on the "Diagnosis of pathological conditions of the colon"; by Dr. Alan Brown, Associate Professor of Pædiatrics, University of Toronto, on the "Constitution of the child"; and by Dr. Bowman C. Crowell, of Chicago, on "Bone sarcoma." Dr. Crowell is Chairman of the Bone Sarcoma Committee of the American College of Surgeons, which is doing so much to assist the study of this most important condition, and his very able address was heard with much interest.

XUM

Following the afternoon session, a meeting was held of the Committee on Health Insurance, which was formed in the District last winter. Very encouraging reports were received of the progress of the work of this Committee, of which the Chairman is Dr. F. C. Neal, and the Secretary, Dr. H. M. Yelland, both of Peterborough. The information received from the questionnaire sent to all medical men of the District is proving very interesting and instructive, and when all have been received, it is expected that much of value to the profession will be the result.

During the day, the lady visitors were entertained by the wives of the local doctors at luncheon and bridge at the golf club, where a most enjoyable afternoon was spent.

At 7.15, the medical men with their ladies met for dinner at the Empress Hotel, when representatives of various local bodies were the guests of the Peterborough Medical Society. The speaker of the evening was Rev. G. Stanley Russell, of Deer Park United Church, Toronto, who took for his subject "Canada and the Motherland". Of particular interest to his medical hearers were Mr. Russell's remarks on the subject of unemployment and health insurance. From a long and intimate experience with this work in the Old Land, it was the speaker's profound conviction that unemployment insurance is not for us in Canada; the solution of our problem lies in work, not charity. "Great Britain, if she could to-day get rid of this system, would make the greatest step back to real prosperity which it would be possible for her to take", said the speaker. He did not suggest that insurance against sickness was in itself undesirable, but he made it plain that the patient should be free to choose his own doctor, and the doctor to make his own charge. In concluding, Rev. Mr. Russell said "I hope the medical men in Canada will set their faces against a similar act such as that which is in operation in England."

Special Correspondence

The London Letter

(From our own correspondent)

Since the notorious Manchester beer epidemic arsenical poisoning on a wide scale has not been so prominent as occasional criminal efforts with weed-killer on single or small groups of victims. Recently, however, the Midlands got rather a fright when a sweet factory was found to be using pure arsenious oxide as a dusting powder for boiled sugar sweets. Early last month the medical officer of health for Stoke-on-Trent was informed by a practitioner that twelve children had been take ill with severe vomiting after eating some cough-drops. Prompt analysis of the suspected material revealed the presence of arsenic and the sweets were all traced to one factory where the recipe, containing glucose, at first suggested that the beer story was going to be repeated in an interesting variation. The owner of the factory was found to be suffering from severe dermatitis and other cases of poisoning after eating sweets were soon cropping up in the district. The mischief was finally traced to a bag of dusting powder which had been casually bought from a man who had equally casually found it in the deserted factory of an unsuccessful metal worker now reported to be in America. The children suffering from this poisoning all recovered, probably because the very large doses ingested caused the stomach to reject most of the arsenic, but despite this happy issue it is disquieting to learn that large amounts of such a dangerous poison can be bought by metal workers, for example, and then left about in a quite unlabelled condition. The medical officer of health concerned acted with commendable promptitude, and now the police are looking into the legal aspects of the matter. It would seem that one object lesson from this scare is that regulations for the sale of arsenic must be tightened.

From the antivivisectionist literature it might be gathered that our medical schools are thickly populated with animals in all stages of terrible suffering, and the latest returns for the year 1929, showing a 20 per cent increase in the total experiments on animals compared with the previous year, will no doubt be received by the enemies of science with acclamation as a justification for all their efforts. But a close study of the Home Office publication will show that the regulations are so stringent in this country that there is no cause for any popular agitation on any grounds except amongst those who have been described as having "anti" minds. Of the total of over four hundred thousand experiments there were 383,922 where the simplest of procedures constituted the experiment: feeding, inoculations, the administration of various substances by the mouth, or by inhalation, or by external application, and the abstraction of specimens of blood by puncture of a vein or venesection. Even under the certificate which allows of these simple procedures there is a very strict

regulation regarding pain and in the remaining instances where more elaborate surgical procedures are necessary the "pain condition" is even more severely applied. It is significant that most of the experiments carried out during the year were under the auspices of official bodies with a view to the preservation of the public health or for the diagnosis and treatment of disease. The opponents of vivisection never seem to stop to consider to what extent the purity of their food supply, their milk, their water, and even their gas, is dependent directly or indirectly upon what they are always ready to denounce as terrible experiments, and while they are always willing to attribute the disappearance of typhoid from the last war to better sanitation rather than to vaccines they conveniently forget the basis of modern sanitary methods.

The annual meetings of the British Association in Bristol did not fail to provide the newspapers with copy which clever sub-editors were easily able to make sensational. It is difficult for anyone who has not attended the meetings or read the various papers to pass any comments on the whole business, but as far as can be ascertained the silliest things were said in the section on child psychology. From the more respectable columns of the medical press it is possible to learn that Dr. W. E. Blatz, of Toronto, addressed the meeting, and, in case this catches his eye, let it be said at once that the prejudices of the writer are entirely directed against the unmarried ladies who lay down the law as to the way mothers and fathers should bring up their children. It is perfectly true that what a psychologist may say in a meeting about the general uselessness of parents must be taken in its context as regards the adolescent or adult who has got on the "psychological rocks", in Dr. Blatz's striking phrase, but it would make it much easier for practising pædiatricians if press summaries were more carefully prepared. It is difficult enough refuting the wild fancies of less responsible medical publicists without having to deal with sweeping statements from lay psychologists. We used as a profession to be accused of forgetting that a child had a mind as well as a body; now the trouble seems to be to remind the psychologist that the owner of a complex has heart, lungs and abdomen as well as a gluteus maximus. Joking apart, however, Professor Valentine's address from the presidential chair was an excellent piece of observation on his own children, and probably one of the best papers at this section. He has been since accused of all sorts of things in the columns of the *Times*, including the sacrificing of his own children in the cause of science!

ALAN MONCRIEFF

1 Queen Anne St., London, W.1.

The Edinburgh Letter

(From our own correspondent)

The Royal College of Physicians of Edinburgh has resolved to celebrate on St. Andrew's Day, November 30, 1930, the 250th anniversary of its foundation. The first move towards the foundation of a College of Physicians in Edinburgh was made in 1617, on the occasion of King James' first revisit to Holyrood after succeeding to the throne of England. In that year an attempt was made to incorporate the practitioners of medicine in Scotland for the purpose of raising the standard of the practice of physic. King James regarded the project favourably and issued an order to the Scottish Parliament for the establishment of a College of Physicians in Edinburgh. This order gave directions for the inspection of apothecaries' shops and the appointment of examiners in medicine, and made it illegal for any person to exercise the art and science of physic within the City of Edinburgh and the neighbourhood without the diploma of the College. In spite of royal favour, dissensions, chiefly of a religious kind, prevented the wishes of the sovereign from being carried out. In 1630 in the troubled reign of King Charles I a further effort was made, but nothing was achieved, owing to the unsettled state of public affairs. In 1656 during the Protectorate of Oliver Cromwell a Patent was made out instituting a College of Physicians of Scotland, and conferring very extensive powers on the proposed College. The wide authority which was to be conferred on the College created jealousies among other corporations and interests, and before the matter was finally adjusted the Protector's death put an end to the scheme for a time. In the face of opposition by the Surgeons, the Universities, the Municipal Corporation and even the Bishops and Archbishops, the physicians held to their project. The Charter of Incorporation was eventually obtained from Charles II and the Great Seal was appended on St. Andrew's Day, 1681. Sir Robert Philip, in his very suggestive Oration to the Edinburgh Harveian Society in 1926, traces a connection with William Harvey in the foundation of the College. Sir Charles Scarborough, who came to Scotland in 1679 as medical attendant to Prince James, Duke of York, High Commissioner to Scotland had just succeeded Harvey as Physician to the King. Several of the early promoters of the College were known to Scarborough. Balfour he had already known as a pupil of Harvey. Archibald Pitcairne, the second secretary of the College was devoted to the teaching of Harvey, which in Edinburgh and Leyden he did much to disseminate. Sibbald who was largely re-

XUM

sponsible for the success of the enterprise says, "We consulted with Sir Charles and found him our great friend, and very ready to give us his best assistance, with the King and Duke, who was by this time High Commissioner". In this connection it should not be forgotten that the second attempt to found the College was made about the time King Charles I visited Scotland. At that time William Harvey was Physician-in-Ordinary to the King and accompanied him to Holyrood.

In 1704 the College acquired the house and grounds of Sir James Mackenzie in Fountain Close in the High Street. In 1770 the premises in Fountain Close were sold, and in 1776 the foundation stone of a new Hall in George Street was laid by the celebrated Dr. William Cullen. This George Street Hall was sold in 1843 to the Commercial Bank, and the College moved to its present home at 9 Queen Street.

During its 250 years the College has discharged zealously the duties entrusted to it. It has taken an active part in maintaining a high tradition in the practice of medicine and in promoting schemes for the public good. One of the earliest baths, if not the first, in Edinburgh was constructed and maintained by the College. The publication of a pharmacopœia was undertaken, and this was first published in 1699, reappearing at intervals until 1841 and running into 14 editions. In 1858 the Medical Act conferred on the General Council of Medical Education and Registration the power of issuing a pharmacopœia. The College in 1862 gave its formal assent to a Bill being introduced in Parliament by which the British Pharmacopœia superseded in Scotland that published by the College of Physicians. In 1738, the members encouraged the founding of an Orphan Hospital in the City, and the President of the College is still ex-officio a governor of that institution. Many of our oldest charitable institutions have been indebted to the College for pecuniary aid—as the Blind Asylum, and the Charity Workhouse. The public are also indebted to the College of Physicians for the origin of some of our finest medical institutions. The Royal Edinburgh Asylum for the Insane and, most famous of all, the Edinburgh Royal Infirmary, which has just completed two centuries of service in the alleviation of sickness and distress. From the time of its incorporation the attention of the College appears to have been steadily directed to the formation of a library. This project owes its inception to Sir Robert Sibbald, who in 1681 gave some 100 volumes which formed the nucleus of the present collection. The library is housed within the Hall of the College, and now numbers over 100,000 volumes, and is certainly one of the finest medical libraries in the world. The laboratory of the College was formed in 1889, mainly through the initiative of Sir John Batty Tuke, for the prosecution of original research. The results of the researches have been collected in seventeen volumes of Laboratory Reports, and an annual report is issued by the Curator. A Museum of Materia Medica was formerly kept at the College, but this was transferred in the year 1896 to the Pharmaceutical Society of Great Britain, 36 York Place, Edinburgh, where it now is. The College through its Representatives conducts examinations in Medicine. There are three grades—Licentiateship, Membership and Fellowship. The first two are attainable by examination. Admission to the Fellowship is by election. The anniversary celebrations will take place on St. Andrew's Day and December 1, 1931. A committee has been formed and arrangements are in progress to make the celebration of the 250th anniversary worthy of the long and illustrious record of the College.

The annual report for 1929 has been issued by the General Board of Control for Scotland. On January 1st of the present year there were in Scotland 19,059 insane persons of whom the Board had official cognisance. Of these 2,963 were maintained from private sources, 16,020 from the rates and 76 at the expense of the State. This is an increase of 28 over the figure of last year. The number of voluntary patients admitted into mental hospitals in 1929 was 800. The Report points out that the Local Authorities with whom it has been the duty and privilege of the Board to co-operate have now ceased to exist. The Local Government (Scotland) Act, 1929, brought to an end District Boards of Control and Parish Councils, to whom has been intrusted in the past the care of the insane and the mentally defective. The Board records its high appreciation of the way in which these bodies have discharged their duties, and offers its assistance and co-operation to the Town and County Councils, to whom this responsibility has been transferred. In recent reports reference has been made to occupational therapy. In the report of the Royal Commission in 1857 reference is made to the necessity of asylums having land for the employment of patients, occupation being encouraged as a therapeutic agent. In accordance with these principles the Board has all along encouraged the acquisition by institutions of farm and garden land.

A special department for housing the enteric fever "carriers" is now in occupation at Hawkhead Asylum. The question of dealing with all "carriers", including not only enteric fever but also the "carriers" of such infections as paratyphoid and dysentery, requires serious consideration. It would be of advantage if all "carriers" could be located in one

institution. It should be kept in mind, however, that some years ago, tuberculous affections were four times as prevalent in mental hospitals as they were in general hospitals. The erection of separate sanatoria reduced the proportions of tuberculous affections, so that it is now no longer higher than that obtaining in general hospitals.

Special work has been done in one of the Glasgow asylums, where it was discovered that undulant fever is present, particularly in patients who have been doing farm work. It is suspected that the fever has been present in the asylum for several years, and only by special investigation have the facts been elicited. The investigation was in connection with an outbreak of contagious abortion in the tubercle free herd of Ayrshire cattle, which supplies the institution with milk, and was carried out with the object of testing the incidence of *Br. abortus* infection in man. Out of 112 cases examined, 10 male patients reacted to tests for both *Br. abortus* and *Br. melitensis*, the organism of Malta fever. The presence among the asylum patients of undulant fever, due to *Br. abortus*, is receiving the attention of the Board.

GEORGE GIBSON

23 Cluny Terrace, Edinburgh.

LETTERS TO THE EDITOR

A Correction

To the Editor:

The title of my paper in the August number should have been "Rupture of the Anterior Cerebral Artery" instead of "Rupture of the Middle Meningeal Artery" as published. The mistake was mine.

Regina, Sask. Yours truly,
Sept. 17, 1930. LILLIAN A. CHASE

Topics of Current Interest

Preventive Vaccination with B C G

A discussion at the congress of the International Union against Tuberculosis, held at Oslo in August, on preventive vaccination against tuberculosis by means of the Calmette-Guérin bacillus, was opened by Prof. A. Calmette (Paris) himself. Immunity against tuberculosis was, he said, determined solely by the presence in the body of living tubercle bacilli. B C G was a living strain of fixed characteristics hereditarily attenuated after more than 230 subcultures on a glycerinated ox-bile medium. It was entirely free from pathogenic characteristics and the presence of bile rendered it more capable of absorption by the intestine of infants. Although when introduced into animals in massive doses it might give rise to tubercles, these underwent regressive changes and disappeared without leaving any trace. The organism, he believed, passed easily through the intestinal wall, and provided the animal was isolated for at least a month from contact with an infectious case an immunity was produced in cattle which lasted for about 18 months—*i.e.*, so long as the bacilli remained in the lymphatic glands. Subjects already infected by virulent bacilli derived no benefit from the vaccine. Prof. Calmette denied that the B C G strain could ever become virulent in the way suggested by S. A. Petroff and others; he regarded such events as the result of accidental contamination. The method had been practised since 1924 in many countries of the world, and a fall in the tuberculosis mortality (and also in the general mortality) had been observed among vaccinated as compared with unvaccinated children. He claimed the method as suitable for universal application.

Qualified support was given by F. Neufeld (Berlin), while W. H. Park (New York) and Heynsieus van den Berg (Amsterdam), from a series of 365 children, recommended the method as free from danger. The remainder of the ten official speakers had nothing but praise for the method, and advocated its more general acceptance. Some comment arose on the use of the general infantile mortality as a test of the efficacy of the vaccine; L. Bernard said it had been adopted to give greater accuracy, since it was impossible during life to diagnose tubercle with certitude among children. E. A. Watson (Director of the Animals Diseases Research Institute, Ottawa) was the principal critic of the method; he had obtained, he said, 36 per cent of mild tuberculous lesions by the injection of B C G, more or less severe in 2-7 per cent. A. Kirchner (Hamburg) supported Petroff's view. A. Fontes (Brazil) said he had observed no ill-results in a series of over 4,000 cases. A. Greil (Innsbruck) condemned not only vaccination but the theoretical conception of immunity. No speaker touched on the recent catastrophe at Lubeck, as the causes of that unfortunate affair are still under consideration by the German health authorities all reference to it was excluded by common consent.—*The Lancet.*

Chromosomes in Man

Ever since the evidence was presented that the chromosomes are, in all probability, the carriers of the hereditary factors, and are an essential part in the sex-determining mechanism, it has become a matter of some considerable interest, not to say importance, that the number and the character of the chromosomes in man

XUM

should be determined. As far back as 1912 Winiwarter published his observation that the diploid number of the male was 47, that of the female 48. From this it seemed to follow that male was to be distinguished from female in the human species by the possession of a single unpaired X chromosome. Other papers dealing with the same subject followed in rapid succession, but without exception they seemed to indicate that Winiwarter was wrong, and that a diploid number of 24 was the correct count.

At this point there appeared three papers—two from Japan and one from America—which confirmed Winiwarter's conclusions, though they differed amongst themselves on the question whether, in the male, there were 47 or 48. Oguma and Kihara reported 47 chromosomes in spermatogonia, whereas Painter reported 48, of which 2 were an XY pair. The discussion was somewhat complicated by the fact that the Japanese dealt with Japanese material, whilst the American dealt with American white and negro. Later, Winiwarter and Oguma published a joint paper in which their earlier conclusion that the male had a single unpaired X was reaffirmed.

Evans and Swezy, in their recent monograph on *The Chromosomes in Man, Sex and Somatic*, reopen the question by an extensive study of human spermatogenesis. It differs from the former studies by being much more extensive and comprehensive. They present indubitable evidence for the existence of an XY combination in the human male, and clearly demonstrate the fact that the diploid number in both male and female is 48. The material was obtained from white, negro, Mexican, and Indian, and, in addition, chromosome counts were made on the tissues from two embryos, from the uterus of a young girl, and also from fragments of carcinoma taken from the lip of a middle-aged man. They demonstrated beyond all doubt that in spermatogonia there are 48 chromosomes, and that in the primary spermatocyte the reduced number is 24, as it is also in the secondary spermatocyte. They find that the Y chromosome is the smallest element in the whole chromosome content, and that its recognition is made easy because of its characteristic small size. In the primary spermatocyte the X and the Y are paired, and they segregate during this particular division. Among the secondary spermatocytes there are two kinds. Some contain a small Y; in others this particular chromosome is not to be found, although the total number of chromosomes is 24. It follows from this that the mature sperm is also of two kinds—one which carries the Y, and the other which carries the X. Their evidence confirms the conclusion that in the human subject the male is the digametic sex. It can now be accepted without question that the diploid number of chromosomes in man is 48 and the haploid 24, and that the male is XY. Furthermore, it is established that the races cannot be distinguished by differences in chromosome content.—*Brit. M. J.*, **2**: 187, 1930.

The Management of Opium Addiction

Estimates as to the number of persons in the United States who are addicted to the use of opium and its alkaloidal derivatives have varied widely. The opinion of certain government experts has restricted the number to 150,000, though there are not a few students of the subject who regard this figure as far too low. Unfortunately, the methods for securing a "census" of the addicts are far from dependable. In any event, addiction remains a truly serious problem for medical consideration. Many of the so-called specific cures have been given fair trials by critically minded observers, but the results have been consistently unconvincing. This applies to rationally conceived proposals as well as to exploited products like "Narcosan" or the alleged secret Kahle treatment discussed in the German medical press. The upshot of the situation to-day therefore seems to justify the conclusion of a British reviewer[1] who states that it is now realized more thoroughly than ever before that the major problem is not to free the addict from his drug but to keep him free. In other words, "the best cure of all for addiction is not to be an addict." The *Journal*[2] has previously referred to the extensive studies on the physiological fitness of most habitués by Light and his collaborators in Philadelphia. They pointed out that morphine addiction is not characterized by physical deterioration or impairment of physical fitness aside from the addiction per se. Herein lies the hope that rehabilitation by any process may be expected to be satisfactory so far as the physiological functions are concerned. The mental and psychological problems are not yet so easily disposed of, particularly when unwholesome sociological factors are involved. Relapse is common to all methods of treatment. Admitting this, the question as to whether the withdrawal of the alkaloid should be gradual rather than abrupt may now be discussed in the light of many reports. According to the latest reviewer, British opinion is, with a few notable exceptions, in favour of a reduction treatment as the routine method of cure. There appears, according to Adams, to be little evidence that relapse is more common with such treatment than with sudden withdrawal. Indeed, as he points out further, it appears unjustifiable to inflict unnecessary suffering by employing the harsher methods, except in unusual cases.—*J. Am. M. Ass.*, September 13th, 1930.

1. ADAMS, E. W., A Further Summary of Recent Literature on Drug Addiction, *Bull. Hyg.* **5**: 429, June, 1930.

2. LIGHT, A. B., Opium Addiction; XI. General Summary, *Arch. Int. Med.* **44**: 870, December, 1929. Some Aspects of Opium Addiction, editorial, *J. Am. M. Ass.*, **94**: 340, February 1st, 1930.

Laboratory Outbreaks of Psittacosis

Recent investigations of psittacosis in America have had dramatic sequelæ. In many of the laboratories where the disease has been studied cases of infection amongst research workers and attendants have occurred, some of which have proved fatal. Investigators at first assumed that psittacosis was an *aertrycke* or allied infection, and adopted what they considered suitable precautions, only to find that these were quite inadequate. But even those who came later on the scene, and were forewarned by the bitter experience of their predecessors, have not escaped, for one case of infection has occurred at the Rockefeller Institute despite most elaborate precautions. Perhaps none of these outbreaks has been quite so remarkable as that occurring in the Public Health Laboratories, Washington, which provided the material for a clinical survey by E. Petersen, O. B. Spalding, and O. Wildman*. This outbreak affected 11 persons; but its magnitude is not its most important feature, for of these 11 persons 9 had no access to the rooms in which the psittacosis investigation was being carried out. The laboratories concerned are housed in three buildings which communicate by tunnels and causeways, but the 11 cases of infection were confined to the personnel of the building in which the psittacosis investigations were being pursued and did not spread into the two other buildings. The infected birds were received on January 16th, and of the three workers who handled them two fell ill on January 25th and February 6th, respectively; one case proved fatal. The remaining nine cases appeared on February 15th, 28th, March 10th, 11th, 12th, 13th (two cases) 14th, and 15th. It will be observed that the last seven cases occurred close together, suggesting as G. W. McCoy points, out, that they became infected about the same time from a common source. The nature of this common source of infection is obscure. Had any of the patients infected others in their homes one might have thought that the laboratory outbreak was due to spread from man to man; but no home infections occurred and, moreover, the history of this disease suggests that the human case is a negligible source of infection. Why infections should spread from parrot to man with such ease and from man to man with such difficulty remains a mystery, but an almost identical problem is presented by tularæmia and a most interesting line of research awaits the intrepid investigator of either of these infections. We have been fortunate in this country for, with precautions certainly no more elaborate than those adopted elsewhere, laboratory infections have not occurred, apart from one relatively mild case.

The clinical part of Petersen, Spalding, and Wildman's communication covers ground now well known and brings no new facts to light. In his investigation of this disease in the Argentine last year E. Barros made free use of x-ray examination of the chest and spoke highly of its value. And if convalescent serum has not been used in this country in the treatment of psittacosis, it is for the good reason that experiment has shown it to have little or no protective value. This finding is supported by the results now reported, for in our opinion the evidence provided contains no justification for the conclusion that the use of immune serum in daily doses was of "apparent benefit." A. P. Thomson obtained comparable results with serum from individuals recently inoculated with T.A.B. vaccine. — Rev. *The Lancet*, **1**: 535, 1930.

J. Am. M. Ass., **95**: 171, 1930.

Mosquitos in Britain

It is well known that the presence of mosquitos is not a serious menace to human health in these islands. We have, it is true, no fewer than three species of anopheles, none of them very rare, and each one known to be a carrier of malaria in other countries; but, owing probably to conditions of temperature, locally acquired infection is a rarity. Occasional deaths occur from septicæmia consequent on the bites of mosquitos, but these events also are exceedingly unusual. We may say, then, that the British mosquitos should be considered as a nuisance rather than as a menace to health, and this is fortunate, for we have some twenty-six species indigenous to our country. Some of those which breed in ponds cause inconvenience, as anyone may experience who visits the public woodlands round London at this time of the year; but by far the greatest nuisance is occasioned by two species which breed only in salt marshes round our coast. The same varieties of mosquito, or their near relatives, have attracted a great deal of attention in parts of Canada, New England, and elsewhere, and it may be stated generally that the salt marsh mosquitos are distinguished by inflicting an unusually painful bite, by their diurnal activity, and by their very great range of flight. They travel in from the Essex marshes and bite people in the London docks, so that it is not surprising that in America, that continent of wide spaces and great distances, they are reputed to travel as much as forty miles. So far as Great Britain is concerned, the control of the mosquito which breeds in salt marshes has been worked out and applied by Mr. J. F. Marshall of the British Mosquito Control Institute at Hayling Island. We understand that his home is on the island. But a few years ago it was customary for the residents to vacate their homes in July and August, and leave the island as far as possible to the mosquitos. Times have changed, the mosquitos have vanished, and the island is now populated at that season by holiday makers. In a pamphlet before us Mr. Marshall discusses the organization of control. He shows that nothing effective can be done unless the particular

XUM

species is identified; this is because different sorts of mosquito breed in different places, and it is idle to blame the domestic water butt if the insects are coming from a pond in a neighbouring wood. When the insect has been identified, its breeding-place may be located and abolished without great difficulty; for example, in the case of the salt marsh mosquito, which breeds in brackish water that is not used by cattle, the mosquito larvae may be controlled by oiling the water or poisoning it with an appropriate dose of cresol. —*Brit. M. J.*, **2**: 329, 1930.

The Collection of Portraits and Prints in the Academy of Medicine, Toronto

The following article was written by Jehanne Biétry Salinger, writer on art, for the Mail Service of the Canadian Press:

"Who knows that the building of the Academy of Medicine in Toronto is also somewhat of an educational art gallery in which hang a number of prints (a few of which are fine originals), and paintings that would offer a wide and interesting field to the art student as well as to the layman curious to learn about medicine with the help of 'images'. An important group out of this collection was offered to the institution by the late Sir William Osler.

"The most familiar figures among the famed men portrayed in the prints and paintings are Dr. Edward Jenner, the discoverer of vaccine and Dr. William Harvey, who discovered the circulation of the blood in the seventeenth century.

"If it did not sound irreverent, one would say: 'If you wish to find, at first glance, the engravings and pictures which represent Edward Jenner, look for the cow.' The artists who have represented this famed scientist, have almost without exception added a cow to the picture. It is a simple and picturesque way of telling the story of Jenner finding that the virus of cowpox could be preventive of smallpox. It avoids the arduous details of a medical treatise and it is direct and naive.

"From the historical viewpoint, the engraving by C. Manigaud, showing Edward Jenner performing vaccination for the first time on a baby is notable. While the doctor is about to inoculate the infant, who is in its mother's arms, a large window is open, in the background, and a kindly cow is seen peering through.

"From the art viewpoint and among the more beautiful prints, there is one of William Harvey with a sort of unrolled map of the blood circulation, designed like a coat of arms, which is quite fine and most interesting.

"A portrait of Thomas Sydenham and one of Sir Samuel Garth, engraved by Goldar, are done in the brilliant technique which came to a peak during the seventeenth century. Both of these prints are interesting also in that they bring to mind the memory of these two famed Englishmen, the first of whom is considered the father of English Medicine, the English Hippocrates, the other a well-known doctor, also famous for his 'mock-heroic poem', 'The Dispensary', a satire in which he ridiculed the apothecaries and mercenary physicians.

"Two prints from well-known paintings by Teniers: 'The Alchemist', and 'The Country Surgeon', are good examples of the craft of wood engraving, when it is considered an artistic achievement to be able to translate into black and white the creative work of famous painters.

"The most picturesque note in the entire collection is offered by a colour print of A. Barrére. It is a cartoon of a few of the best-known bacteriologists, clinical surgeons, gynæcologists and general practitioners of the time, in France. A few freaks, just out of the alcohol jar, are included in that humorous collection of medical men seen in bloody smocks and grotesque attitudes. Two of them wear high hats, several are holding knives and other aggressive tools, which are anything but promising of a good time.

"Old-fashioned paintings are still very much in favour with physicians, judging from the calibre of those owned by the Academy of Medicine, Toronto. As one enters the building, one is greeted by 'The Country Doctor', an oil signed by Paul G. Wickson, and dated 1892. It is a snowscape and in the foreground there is a sleigh from which smiles the Doctor. 'Gossip', a genre painting in the style of George A. Reid is another old timer included in the art collection of the Academy.

"The name of J. W. Forster survives among medical men, in the measure in which he was able to portray truthfully some of the well-known ancestors of the Academy of Medicine in Toronto. His portrait of Michael Barrett, founder of the Women's Medical College, is done in the manner of a good French Salon portrait of the past century and offers no little contrast to the portrait of Augusta Stowe Gullen, the first woman to graduate in medicine from a Canadian University, and which was painted by Allan Barr and presented to the Academy, only recently, by the Medical Alumnae. This painting, which hands by the side of that of J. W. Forster's is done in very strong colours and plays happily with contrasts of warm and cool tones. It is an interesting piece of character study, and a forceful portrait, which stands out in one's memory with all its features.

"If one agrees with the view that science and art are the two rails on which to safely travel toward beauty and truth, then undoubtedly the Academy of Medicine of Toronto is in a favoured position to discover quite a few things about Beauty, only there are additions and eliminations desirable in order to make a notable collection out of the present one. Yet the start is there and it is worthy of notice."

England "The Paradise of Quacks"

Sir Leonard Hill, speaking at Ilfracombe recently at the first meeting of the annual conference of the Sanitary Inspectors' Association, of which he is president, said that more than 100 years ago England was called the paradise of quacks, and it was entitled to the claim now.

"The credulity of the public is unchanging," he continued. "The evil is rapidly increasing because ours is the only nation which does nothing to check it. Profits are being made by aliens with remedies which, if employed in their native land as they are employed here, would send them to prison as enemies of society.

"Vast fortunes are made out of fake medicines, and it has been estimated that £2,000,000 a year is spent on advertising these medicines.

"Simple household remedies have been sold for years at a retail price out of all proportion to their cost. These vendors rob the poor and the ignorant, and should be prohibited under drastic penalties by the law. It is the overwrought, the despairing, and the poor who should be protected."

Sir Leonard Hill explained that he had taken his information from the files of the British Medical Association.

Abstracts from Current Literature

MEDICINE

Prevention of Heart Disease. Robey, W. H., *New Eng. J. of Med.* **202**: 983, 1930.

In 1929 more than 225,000 people died of heart disease in the United States. In New York City, Cincinnati, and Boston surveys of the public school children showed that an average of 1 per cent had organic heart disease. Except for the very small percentage with congenital heart disease, people are born with normal hearts, so that cardiac infections, in the earlier years at least, come preëminently within the fields of infectious diseases and preventive medicine. After the infection has taken place the physician is caring for a crippled member of society and one who is bound to become an increasing economic loss to industry. It is important not to brand a child with the ominous diagnosis of heart disease merely because a mitral systolic murmur is heard.

A rapid action of the heart accompanied by cyanosis and tremors is a pure neurosis without organic involvement; it occurs in certain types of persons, especially when they are undertaking some new and irksome form of work or when undergoing an emotional strain. A man of 58 was convinced that he had angina pectoris because of discomfort in his precordium. X-ray plates of his spine showed hypertrophic arthritis of the fourth, fifth, and sixth cervical vertebræ.

The types of heart disease which commonly receive clinical consideration are rheumatic, syphilitic, and arteriosclerotic. In the rheumatic heart four years usually elapse between onset and cardiac disability, which continues for about seven years before decompensation, and with it probably complete disability develops, which continues for about four years until death. Rarely is endocarditis a complication of diphtheria. Cardiac embarrassment may be extreme during the disease, but when the disease is over little remains to indicate cardiac involvement. In scarlet fever endocarditis rarely occurs except as a complication of arthritis, which is merely a part of the blood stream infection. Infections with the organisms of the rheumatic group are responsible for much of the cardiac disability of the third, fourth and fifth decades of life. Œdema of the heart might occur and such an exudate which might appear and disappear could easily give rise to the varying changes in the electrocardiograph seen in a single patient in the course of rheumatic fever. Since the signs of organic mitral stenosis are largely due to cicatrization of the valve orifice, such a condition would not be possible during the height of an attack of rheumatic fever unless mitral stenosis had previously existed. Rheumatic fever under two years of age has been authentically reported, but it is very rare. In children the joint symptoms are of much slighter character, while the cardiac lesions are much more pronounced and frequent. Growing pains, or pain in the thigh or calf, should be taken as seriously as pain and swelling of the joints. Vague sore throats, nervousness, and irritability quite apart from definite chorea should never be passed over as of little importance. Another symptom of significance is the rheumatic nodule. Chorea, which is to be distinguished from habit spasm, is just as much a part of rheumatic fever as tender joints. Unexplained fever, with vague symptoms, perhaps pain in the stomach, nausea and vomiting, may all be indicative of rheumatism in a child, sometimes a tonsillitis and heart lesion may precede the polyarthritis, or the order may be reversed. Those who believe in the enucleation of the tonsils as a preventive of rheumatic fever think that the reasons for failure may

XUM

be as follows: (a) the operation may be imperfectly performed and tonsillar remains be left which act as a focus in subsequent attacks. (b) If the tonsils are allowed to remain through repeated attacks, they succeed in establishing other foci, principally in the synovial membranes of the joints, which in turn act as foci, even though there has been a complete tonsillectomy. Robey and Finland studied 165 cases of rheumatic fever: 71 were operated upon for infected tonsils, while 94 were used as controls. They concluded that rheumatic fever could be brought to an end after study and elimination of other foci by performing tonsillectomy, even during the height of the fever and inflamed joints. Teeth are less apt to cause cardiac involvement than the tonsils. Healthy looking teeth are more frequently a source of cardiac infections than the clearly diseased ones, that is, a firmly embedded tooth with an infected root canal is a greater source of danger than a decayed tooth loosely placed in the alveolar process and evident to the patient.

Next to rheumatic fever as a cause of heart disease, especially in the young adult, comes syphilis. The frequently with which neurosyphilis and vascular syphilis are combined in the same patient has led Stokes to say that a routine neurological examination and spinal fluid examination should become part of the study of every syphilitic patient with cardiovascular disease. Arteriosclerosis in a young person should always make one suspicious of syphilis. Arteriosclerosis is a progressive degeneration, the progress of which may be slowed if seen in time.

LILLIAN A. CHASE

The Medical Treatment of Cancer. Todd, A. T., *The Lancet* **2**: 389, August 23, 1930.

The author presents an interesting article on an aspect of cancer that is usually overlooked. He does not claim a cure by attempts to treat the patient rather than the disease, and his results, while not resulting in a cure, have been of considerable advantage to the patient from a mental and a physical standpoint. The drug used is a 0.4 per cent solution of lead selenide, manufactured by British Drug Houses Ltd. The dosage is a very important point in the success of the treatment of the case. A large overdose tends to make the growth increase rapidly in size, while a smaller dose is of no advantage. The dose is determined by experience; certain cases are likely to be resistant and others likely to be sensitive. The dose varies from 1 to 5 c.c. He uses additional treatment in the form of calcium chloride, vitamin D and thyroid extract.

All the cases treated have been very advanced and it is agreed that it will not reduce the mortality of cancer. Todd advises the treatment in association with surgical procedures after treatment by radiation. In inoperable cases, as much as possible of the tumour should be removed by surgical means, afterwards trying to make the remainder regress with selenide. In cases with metastases in the kidney or the liver it will be well to remove the primary growth, for the metastases in the liver and the kidney appear to require smaller doses of the colloid and do badly on the larger doses required by the primary growths. The lead selenide is given to increase local and general defence mechanisms. The author advises calcium chloride, fat-soluble vitamins in large doses especially vitamin D; also small doses of thyroid extract as a tonic and anti-infective agent, and liver extract to combat anæmia.

W. L. GRAHAM

A Method for Determining the Condition of the Circulation in the Limbs of Diabetics. Starr, I., Jr., *Am. J. M. Sc.* **180**: 149, 1930.

Starr Jr. has employed a histamine skin test in order to determine the condition of the circulation in the limbs of diabetics. The test is based upon the observation of Lewis that interruption of the circulation in an extremity prevents the normal development of the skin reaction to histamine. The test is carried out in the following manner. The skin area to be tested is cleansed with alcohol which is allowed to evaporate to dryness. A drop of 1:1000 aqueous solution of histamine acid phosphate (15 per cent chloretone is added as a preservative) is placed on the cleansed area, and the skin is pricked seven times through the drop, the pricks forming a circle about 5 mm. in diameter. The reaction consists of a wheal surrounded by a reddened area (flare) which in individuals with normal circulation appears within five minutes. The greater the degree of circulatory failure, the longer the time before this reaction makes its appearance. The patients must be placed flat upon their backs with the legs extended during the test. The areas chosen for the test were just above the knee, the upper and the lower thirds of the leg, and the dorsum of the foot. The cases were graded according to the time of appearance of the reaction as it was found that the intensity of the reaction was inversely proportional to the time factor. Normally the reaction was found to be complete within five minutes (grade 1). Reactions incomplete in five minutes but complete in ten were placed in grade 2, while those incomplete in ten minutes with a normal control above the knee were placed in group 3. The failure of the reaction to make its appearance in normal time indicates impaired circulation whether from

cardiac failure or disease of the peripheral vessels. Where other possible causes of poor circulation in the legs can be ruled out the histamine test is a fairly accurate index of the degree of vascular damage. In general where arteriosclerosis is present the test shows better circulation in cases with hypertension than in those with normal or low blood pressure.

In a group of 100 unselected diabetics under treatment, the response of the skin of the lower extremities to the histamine test indicated that 32 per cent had normal circulation in their feet. In 34 per cent the circulation was somewhat impaired (grade 2), and in 34 per cent it was markedly impaired (grade 3). The test proved its value chiefly in those cases where vascular damage could not be recognized by ordinary clinical tests and by x-ray of the vessels; in cases where one vessel was obliterated, as a test for collateral circulation; and as an aid in determining the proper site for amputation in cases with gangrene of the foot.

E. S. MILLS

Lung Puncture in Acute Lobar Pneumonia. Stewart, D., *The Lancet* **2**: 520, 1930.

Exploratory puncture of the lung substance has been in use for the diagnosis of various conditions over a period of years, with no apparent hazard or risk of complications. Owing to the cost and difficulty in obtaining concentrated anti-pneumococcus serum for the treatment of type 1 and 2 pneumonias in the Royal Infirmary, Edinburgh, the early and certain knowledge of the type has become most important. The exploring needle of moderate bore is inserted under ordinary technique about 10 cm. into the area of consolidation, suction is exerted with a Record syringe and as the needle is slowly withdrawn, a few drops of lung exudate are obtained. Five c.c. of broth are then drawn up, mixed in the syringe, and the whole injected into the peritoneum of a mouse. The typing is then done in the usual way, the great advantage being the early and accurate report, especially in those cases in which sputum is absent or late in appearing. Cases are cited in which the typing from the lung fluid is compared with that of the sputum, blood culture and post-mortem cultures. The results show this to be an accurate method of determining the type of pneumococcus in the lung. The possible dangers are reviewed and dismissed as inconsiderable in comparison with the value of early knowledge of the type.

J. B. ROSS

The Transmission of Hæmophilia. Mills, C. A., *J. Am. M. Ass.* **94**: 1571, 1930.

In this article and the one immediately following it, by Fairbanks, the transmission of hæmophilia is according to the rule of sex-linked recessive inheritance, namely the males affected and the females normal, although capable of passing on the disease to their sons. In Mills' family, the unusual has occurred and one of the bleeder males has lived long enough to marry and rear a family. The clinical findings are not given in this article, so that, although the type of inheritance is characteristic of hæmophilia, the diagnosis is not beyond question. The pedigree extends over five generations, comprising 62 persons, of whom 12 showed the disease. There were 2 sisters, each with 2 hæmophiliac sons. Of these 4, one married and had 6 daughters. The first of these had no children, but the other five had large families and all five, as was to be expected from our knowledge of the inheritance of this condition, passed it on. One had 1 son affected, 3 children normal; another had 1 son affected, 4 children normal; a third had 2 sons who were bleeders, and 5 children unaffected; a fourth, 1 son affected and 9 children normal, although one of the daughters in turn had a bleeder for a son; while the last daughter had 7 normal children, but 1 of her daughters had an affected son. Although the coagulation time, bleeding time, number and quality of platelets, and retractility of the clot were not reported upon, the type of transmission is here so infallible, and so typical, that one is inclined to accept without hesitation the diagnosis of hæmophilia.

MADGE THURLOW MACKLIN

SURGERY

The Patient with Heart Disease as a Surgical Risk. Butler, Stuyvesant, Feeny, Neil, and Levine, *J. Am. M. Ass.* **95**: 85, July 1930.

What added risk does a given heart lesion present to the contemplated surgical procedure? Such a question must often be decided by the physician. More than 400 cases of organic heart disease were studied, including 138 of so-called chronic myocarditis, 120 of valvular disease, 86 of permanent auricular fibrillation, 35 of angina pectoris and 20 of coronary thrombosis. The similarity of the latter, when accompanied by acute abdominal pain, etc., to ruptured peptic ulcer, gall stones, colic or acute pancreatitis is emphasized. One must decide whether the condition is surgical and then if the need of the operation exceeds the risk in the particular case.

A patient with acute coronary thrombosis had a gangrenous leg amputated and died in 36 hours. Such a death was classed as "inevitable", as against the "unexpected", which included those occurring from cardiac failure, from any of the accidents of cardiac disease such as cerebral embolism and hæmorrhage, coronary thrombosis, post-operative pneumonia, or any circulatory or other death that might not have occurred had the operation been avoided. Only

XUM

those cases in which the heart was considered a major problem were selected for the series.

Two-thirds of the patients received a general anæsthetic, mostly ether, but a few had gas and oxygen, with or without ether. Local anæsthetics were procaine, nerve block, and spinal. The latter were not necessarily minor surgical problems. A local anæsthetic was used often because of the serious condition of the patient. The mortality was similar with local and general anæsthetics. The most significant point was that the mortality was only 12 per cent and of these one-half were "inevitable". In order of frequency, valvular disease contributed 2 per cent of "unexpected" deaths, chronic myocarditis (with a history of congestive heart failure, past or present) 5 per cent. These were mostly older persons tolerating operation well.

Contrary to general opinion, auricular fibrillation furnished only 3 per cent of "unexpected" deaths. Angina pectoris gave 8 per cent and seems to cause coronary thrombosis after operation, in a few cases. Twenty operations on patients with coronary thrombosis gave 8 "unexpected" deaths, illustrating the high mortality in this condition. All six patients with paroxysmal tachycardia recovered. Thirteen operations were performed on patients with syphilitic aortitis, with one "inevitable" death. Fifty patients with congestive heart failure furnished "unexpected" deaths. One-eighth of this surgical series had heart disease with nephritis, and gave a mortality of 15 per cent, three times as great as the seven-eighths without nephritis, indicating well the added risk with kidney complication. When the life expectancy is short, palliation should replace operation, but in many types of heart disease the surgical risk is not appreciably greater than in the normal person.

This study brings out the fact that ether is tolerated well by those suffering from heart disease.

C. R. BOURNE

Hyperparathyroidism. Pemberton, J. DeJ. and Geddie, T. K. B., *Ann. of Surg.* **92**: 202, 1930.

The authors report 1 case of hyperparathyroidism and discuss 6 others found in the literature; 4 of the 7 cases were in females. The ages ranged from 14 to 56. Weakness, tiredness, pain, usually in the extremities, polydipsia, polyuria, nausea and vomiting with abdominal pain were complained of. Muscular weakness and hypotonia were marked. Investigation showed: (1) high serum calcium; (2) low serum phosphorus; (3) negative calcium balance; (4) rarefaction of bones; and (5) the occurrence of multiple cysts or tumours of bones. Fractures were reported in half the cases. Loss of weight may be extreme.

In six cases a tumour of the parathyroid gland was removed, and in a hyperfunctioning parathyroid gland.

Hypoparathyroidism is referred to, the criteria on which diagnosis may be made being: (1) low serum calcium; (2) high serum phosphorus; (3) cataract; (4) normal density of bones; and (5) aggravation of tetany by exercise.

Recovery following the removal of the offending gland is rapid. A period of tetany may supervene, but usually is of short duration. A positive calcium balance developed, but x-rays failed to show any increased density of bone.

S. D. GORDON

Acute Perforating Duodenal and Gastric Ulcers. Watson, J. H., *Brit. M. J.* **2**: 169, 1930.

The author reports 110 cases of perforating gastric and duodenal ulcer. Six of the former and two of the latter occurred in females. Of the 102 cases occurring in males, five-sixths were duodenal perforations. In only one case of the series was the perforation a posterior one. Whilst commonest in the third and fourth decades, the ages ranged from 16 to 67. The condition occurred most frequently in the winter months. Usually a previous history of indigestion was present, varying from a few months to several years. Death resulted from: (1) shock from perforation and operation, (2) peritonitis and paralytic ileus, (3) bronchopneumonia. The peritonitis is not a virulent form because (1) the contents of the stomach and duodenum are practically sterile shortly after a meal, and (2) the patient is most likely a chronic dyspeptic and is probably only taking small quantities of light food. Perforation usually occurred three or four hours after a meal. Streptococcus, staphylococcus, and bacillus coli are the organisms that may be present, the latter indicating a severe infection.

Perforating ulcers may be: (1) small ulcers with little induration, (2) large calloused ulcers causing some degree of deformity and obstruction to the outlet from the stomach. Multiple ulcers are rare. The perforation varies from a pin point to 6 mm. or 7 mm. in diameter. The amount of fluid in the peritoneal cavity varies, as does the reaction of the peritoneum to it. In addition to the extravasated fluid there may be considerable peritoneal exudation. The fluid was found to be neutral to litmus.

The symptoms consist of: (1) acute onset of agonizing epigastric pain which absorbs the patient's attention, (2) general deep tenderness of the abdominal wall, (3) early and intense board-like rigidity, (4) a slow pulse of good volume, (5) a subnormal or normal temperature, (6) nausea and vomiting present in the majority of cases, and (7) shallow and

rapid breathing. In addition there may be superficial hyperalgesia, shoulder-tip pain, sweating of the head and chest, pneumoperitoneum and loss of liver dullness. The patient is restless, moaning, and lies on his back with his knees flexed. Free fluid, distention, cold extremities and profound toxæmia are late and ominous signs.

Treatment is operative. Simple closure, closure with anterior or posterior gastroenterostomy, or resection, are the methods of treatment available. Excision of the ulcer bearing area, division of the pyloric sphincter, and suture of the cut edges at right angles to the long axis of the gastro-intestinal tract, would appear the most effective technique. In early cases the peritoneal cavity is gently mopped out and closed without drainage. Late cases require a pelvic drainage tube. No irrigation is done.

S. D. GORDON

The Non-Effect of Irradiated Ergosterol in the Treatment of Fractures. Lewis, K., *Ann. of Surg.* **92**: 415, 1930.

Seventeen cases of fracture of the long bones were studied to determine the effect of the oral administration of ergosterol on the deposition of the callus at the site of the fracture. A daily dose of irradiated ergosterol, 3.3 to 10 mgm. in olive oil, was given for 30 to 70 days. The calcium and phosphorus of the blood serum was followed . In none of these cases had the drug any influence on the degree or the rapidity of calcification. No material change was noted in the blood phosphorus level, and the slight changes in the values for calcium fell within the normal limits. Six cases of delayed union fell within the series. Thus irradiated ergosterol cannot be considered of any value in the treatment of fractures in adults.

S. D. GORDON

Multiple Myeloma as a Single Lesion. Geschickter, C. F., *Ann. of Surg.* **92**: 425, 1930.

The six cardinal diagnostic features of multiple myeloma are: (1) multiple involvement of the skeletal trunk by tumour formation in an adult over 35, (2) pathological fractures of a rib, (3) the presence of Bence-Jones bodies in the urine, (4) lumbar backache with signs of early paraplegia, (5) an otherwise inexplicable anæmia, (6) a chronic nephritis with nitrogen retention and low blood pressure. Usually there is grouping of the symptoms listed.

A case is reported showing a single bone lesion with the complaint of pain in the upper third of the thigh for two months. None of the above six points were observed. Thus multiple myeloma must be included in the differential diagnosis of multiple bone lesions. Multiple myeloma is distinctly medullary and bone destructive in character. It occurs only in red marrow bones. It practically never occurs in an epiphysis, the favourite site for a giant-cell tumour. Secondary carcinoma occurs near the site of a nutrient artery and are usually secondary to growths in breast, thyroid, prostate and kidney. The Bence-Jones reaction occurs in about 65 per cent of multiple myelomas. More rarely it is present in metastatic bone lesions. Chloroma occurring near the orbit is characterized by a low white cell count. Ewing's endothelioma is usually subperiosteal, or intracortical, and is destructive only in the later stages. This lesion results in new bone formation; a multiple myeloma never does.

A primary bone destructive lesion occurring centrally in a single bone, in the shaft of an adult, without expansion, should be suspected of malignancy. A thorough clinical, laboratory and radiological diagnosis should be carried out in order that a proper conclusion may be reached.

S. D. GORDON

Eine neue chirurgische Behandlung der Lungentuberkulose. (A new surgical treatment for pulmonary tuberculosis). Harms and Grünewald, *Beitr. klin. Tuberk.* **74**: Heft 3, 1930.

The authors report two cases which were treated by Löschke's method. After cutting through the scaleni the first rib was excised, in one case combined with avulsion of the phrenic nerve. The cases in which this procedure has been carried out are too few and the length of time under which they have been under observation is too short for one to reach a final opinion. The authors, however, think that the method is worthy of further test, and that Löschke's operation combined with exairesis of the phrenic nerve is likely to be followed by good results in selected cases.

A. G. NICHOLLS

OBSTETRICS AND GYNÆCOLOGY

Chorioepithelioma. Novak, E., and Koff, A. K., *Am. J. Obst. & Gyn.* **20**: 153, 1930.

After a discussion of the classification of choriomatous tumours, this paper is devoted to a consideration of the disappearance of the primary uterine tumour in cases of chorioepithelioma. A case is reported in which such a disappearance was noted, although the patient later died of extensive metastases in the brain and lungs. That there was an original primary tumour in the uterus was proved by examination of the uterine curettings several months before the patient's death.

XUM

Autopsy showed no trace of chorionic villi in the uterus. Other cases of this type which have been reported are reviewed, and the various explanations discussed. The autopsy showed the ovaries to be the seat of characteristic hyperlutein changes, and gave an opportunity of studying the histology of the pituitary body in relation to these changes.

ROSS MITCHELL

The Blood-Platelets in Pregnancy and in the Puerperium. Bland, P. B., First, A., and Goldstein, L., *Am. J. Obst. & Gyn.* **20**: 165, Aug. 1930.

The blood-platelet count for the non-pregnant woman was found to vary from 200,000 to 350,000 per c.mm. Platelet determination, made in 230 women in various stages of gestation, and in 100 of these after delivery, showed that 177 (77 per cent) of the 230 gravid women had from 200,000 to 350,000 platelets per c.mm. of blood, while 42 (18.2 per cent) gave a count of over 350,000. It may, therefore, be stated that the blood platelets are not appreciably increased in pregnancy. Twenty-seven per cent of the 100 women gained over 50,000 platelets per c.mm. within 24 hours after labour, whereas 63 per cent had either a gain of less than 50,000, or had a lower count than in pregnancy. Counts made three to five days after delivery reveal that 55 women (55 per cent) gained more than 50,000 platelets. Of this number, 35 gained over 100,000 platelets. Fifty-one per cent of the counts made on the group of 100 women, eight to ten days after delivery, showed a gain of over 50,000. Twenty-seven of these 51 women gained 100,000 to 200,000, whereas 6 gained over 200,000 per c.mm. The cause of the rapid rise in the number of platelets in the puerperium is undetermined. It has been suggested that the multiplication of platelets may be physiological, a natural response of the body to safeguard against possible infection. Further investigation is necessary to ascertain the reason for the postpartum increase in the platelets and to determine if any relation exists between the increase and the occasional occurrence of thrombophlebitis in the lying-in period.

ROSS MITCHELL

Three Cases of Imperforate Hymen Occurring in the Same Family. McIlroy, L., *Proc. Roy. Soc. Med.* **23**: 633, 1930.

There are a great many developmental anomalies which occur sporadically in a family in which there is no history of other developmental defects; hence they have come to be regarded as non-hereditary in origin. It is the belief of the author of the abstract that all such cases are inherited, but the type of inheritance is usually very complex. The above article lends strong support to the theory that they are inherited. G.C., aet. 20, was admitted to the hospital in July, 1928, never having had a menstrual period. The abdomen was swollen, with a tumour, elastic in consistency, but non-fluctuant, rising out of the pelvis almost to the umbilicus. She was having monthly attacks of pain. Examination revealed an imperforate hymen, which was excised, whereupon there issued a thick chocolate coloured fluid from the vagina, which flowed for several days, with consequent diminution of the pelvic tumour. Following the operation the patient started to have normal menstrual periods. The vagina showed no abnormality. In July, 1929, R.C., the 16-year old sister of the above patient was admitted to the hospital with a practically identical history, and clinical findings. The hymen was excised in this case with results similar to the above. Normal menstrual periods followed the operation. At the time the second sister was operated upon, the mother stated there was a third sister, then 14, who had never menstruated, but who had not complained of pain as yet. She was brought to the hospital, where examination revealed an imperforate hymen, which was operated upon. A fluid far more liquid in consistency than was the case with her two other sisters oozed from the vagina for several days. Normal menstrual periods followed the operation.

MADGE THURLOW MACKLIN

PÆDIATRICS

The Feeding of Premature Infants. Hill, M. C., *Am. J. Dis. Child.* **40**: 1, July 1930.

Hill reports the result of feeding premature infants on breast milk reinforced with evaporated milk in the proportion of one part of evaporated to three parts of breast milk. During the year 1926 all of the 81 premature infants admitted to Bellevue Hospital were consistently given this formula, with one physician in charge throughout the year. All infants weighing less than five pounds at birth were classed as premature; the smallest infant in the series weighed one pound twelve ounces. The average weight gain throughout the period was 0.766 ounces per day as compared with 0.366 ounces per day in the previous year when various feeding methods had been employed. The mortality rate was unaffected, being 80 per cent in both periods. Practically all deaths were due to respiratory infections.

Evaporated milk, with its protein and salt content, as an agent for reinforcing breast milk, is in the author's opinion preferable to carbohydrate. All the infants in this series were stripped morning and night and given passive exercise for three minutes.

A. K. GEDDES

Comparative Studies of the Influence of Acid-Forming and Base-Forming Diets on the Metabolism of Rats. Samuel, E. L., and Kugelmass, I. N., *Am. J. Dis. Child.* **39**: 4, 1930.

Comparative studies of acid-forming and base-forming diets were made on two groups of young rats. Blood analyses at the end of twenty-eight weeks showed in the acid-forming diet group a shift in the acid-base mechanism to the acid side and in the base-forming diet group a shift to the basic side. From chemical and histological analyses of bones, as well as from the serum phosphorus level, it was seen that in the absence of vitamin D rats fed on acid-forming diet developed a more severe grade of rickets than did rats on a base-forming diet. Growth, development, and activity were accelerated by base-forming diets and retarded by acid-forming diets.

The inorganic composition of the child's body (retention of mineral salts) exhibits an excess of basic over acidic elements, as does the computed requirement of inorganic elements during the period of growth. The authors, calculating the acid-base balance of typical hospital diets for young children, find them acid-forming. They believe that the favourable effect of base-forming diets on the growth and activity of rats indicates the advisability in infant feeding of maintaining the intake of basic mineral matter at a higher level. The modern tendency to concentrate feedings and the early administration of orange juice and cod liver oil favour the retention of base. Prophylaxis against rickets calls for a base-forming diet to promote calcium and phosphorus retention. The demineralizing effect of cereals (acid-forming) should be counteracted by the inclusion of fruit juices and vegetable derivatives in the dietary. Base-forming foods are indicated, to prevent and correct the acidosis associated with acute infections and gastro-intestinal disorders. Adequate amounts of milk, fruits and vegetables should satisfy the requirement of a positive base balance throughout the period of growth.

A. K. GEDDES

Acute Bacterial Endocarditis in Infancy, Sansby, J. M., and Larson, L. M., *Am. J. Dis. Child.* **39**: 6, 1930.

A case of acute bacterial endocarditis in an infant of five weeks is reported. A full term male infant, normal at birth, was exposed in the third week of life to an influenzal infection in the mother. In the fourth week of life the physical examination was negative, and the infant was well, until at age of five weeks there was an abrupt onset of fever, loss of weight, diarrhœa, and marked pallor. Physical examination, except for a few râles at the base of the right lung, gave no clue to the diagnosis; the heart appeared normal. Five days after the onset of illness the child died.

At autopsy the auricular surface of the mitral valve showed a line of minute firm pale vegetations. The myocardium was normal. There were small areas of bronchopneumonia and of pleurisy in both lungs. Both kidneys were extensively infarcted. The etiology of the condition was not explained.

Rheumatism is so rare under the age of two or three years that the infant endocardium has been considered to possess almost an immunity to infection. The authors were able to find in the literature only five cases under the age of seven months and none at the early age of their patient.

A. K. GEDDES

Relative Prophylactic Value of Convalescent and Immune Adult Measles Serums. Morales, E. G., and Mandry, O. C., *Am. J. Dis. Child.* **39**: 6, 1930.

During an epidemic of measles in Porto Rico in 1928-29 the authors recorded the results of eight weeks' observation of children exposed to measles by familial contact. All were left in the home. Those with a history of measles were excluded from the study. Group one received convalescent serum; group two, immune adult serum; group three were used as controls. Eighty-five per cent of 120 children given convalescent measles serum prophylactically were completely protected, and most of the remainder developed attenuated measles. Eighty per cent of 132 children given immune adult serum in 20 to 40 c.c. dosage were completely protected, and three-quarters of the remainder developed mild measles. Dosages of 10 and 15 c.c., however, were successful in only 50 per cent of cases. Eighty-one per cent of 183 children in the control series contracted the disease.

Donors of the immune adult serum had had an attack of measles more than one year and less than ten years previously to phlebotomy. The authors advise the more frequent use of adult serum, especially for debilitated children.

A. K. GEDDES

The Schilling Blood Count in the Prognosis of Acute Infections in Infancy and in Childhood. Rogatz, J. L., *Am. J. Dis. Child.* **40**: 1, 1930.

This preliminary report discusses the prognostic significance of hæmograms made by Schilling's simplified modification of Arneth's method. Eighty-one counts were done on 26

XUM

infants and children. The author found that repeated counts were a sensitive indicator of the progress of the illness, since the blood changes anticipate the changes in clinical symptoms by twenty-four hours or more.

The technique is not more time-consuming than that for the ordinary differential count. Photomicrographs of juvenile and stab cells are reproduced; hæmograms and "shift" curves illustrate how the imminence of clinical improvement, recovery, and the appearance of complications may often be predicted. Rogatz believes that on account of its value in immediate prognosis, the Schilling differential blood count should replace the older technique in the study of blood smears.

A. K. GEDDES

Grave Familial Jaundice in an Infant. Jewesbury, R. C., *Proc. Roy. Soc. Med.* **23**: 1112, 1930.

This is another record of those families in which the infants become jaundiced shortly after birth and die in a few days. It is not uncommon to find records in which the entire family of children has been wiped out of existence by this dread malady almost before they had lived two weeks. Nor is its pathology by any means clearly understood. Jewesbury reports a family in which both parents were healthy, whose first child showed no jaundice and is alive and well. The second was born at 7 months, became deeply jaundiced within six hours and died. The third was full term, jaundiced, but lived. The fourth pregnancy resulted in twin girls, born at 7 months, both jaundiced and both died. The fifth pregnancy resulted in the patient, a two day old boy, who was admitted to the hospital with an enlarged spleen, and deeply jaundiced. The urine contained bilirubin, but no appreciable urobilinogen. Therapy consisted in the administration of 8 c.c. whole blood intramuscularly. The jaundice deepened, then paled to a lemon yellow, and the spleen decreased in size. Just what was the rationale of the treatment was left unstated. In the discussion following the paper, it was said that the only family in which every child who had been afflicted with this severe jaundice after birth survived was one in which all children had been treated with injections of the mother's serum, not whole blood.

It might be worth while to try this therapy, for in the majority of cases the child is doomed, and if this simple expedient be efficacious in some instances its value should be known.

MADGE THURLOW MACKLIN

UROLOGY

Induratio Penis Plastica. Gent, W., *Dermat. Wchnschr.* **90**: 554, 1930.

The author reports two typical cases, with cartilaginous infiltrations on the dorsal side of the shaft of the penis, occurring in young men. In both there was marked lateral curvature with pain during erection and sexual connection was impossible. Both cases were completely cured by combined injections of fibrolysin (2 c.c.) and olobinthin (1.1 c.c.), about 30 injections being required. Though this is a rare condition it is an exceedingly distressing one, and since our present methods of treatment are eminently unsatisfactory the treatment here presented would seem to be worthy of further trial.

N. E. BERRY

Pathogenesis of Bleeding in Tumours of the Kidney. Patch, F. S. and Rhea, L. J. *Brit. J. Urol.* **2**:3 248, 1930.

In tumours which invade the renal pelvis and where there is a loss of surface continuity hæmaturia may be ascribed to their great vascularity and to the fragility of their capillaries. This explanation is not sufficient, however, when hæmaturia is seen in tumours of the renal cortex. In these cases bleeding has been thought to be due to congestion induced by the presence of the neoplasm but no very definite proof is available.

A case is presented in which a hypernephroma of the superior pole of the kidney encroached upon the upper calyx, forming a subepithelial projection. Though there was no lack in surface continuity, the patient presented repeated attacks of hæmaturia. An intensive microscopic study was made of the contiguous portions of the tumour and calyx in an effort to determine the origin of the bleeding. The microscopic evidence is presented thus: "The tumour cells are everywhere separated from the kidney pelvis by an intact epithelium and a thickened sub-epithelial zone of connective tissue infiltrated with a few lymphocytes, and free from any evidence of old or recent hæmorrhage. In none of the many sections examined were tumour cells found in the connective tissue just beneath the epithelial covering of the pelvis. In the subepithelial connective tissue are numerous, very widely dilated, and very thin-walled blood vessels, some of which are just beneath the renal epithelium and project into the renal pelvis." It is thought that the hæmorrhage had its origin in these dilated, poorly supported vessels, and that this may be the explanation in many similar tumours of the renal cortex.

N. E. BERRY

Papilloma of the Bladder. Macalpine, J. B., *Brit. M. J.* **2**: 794, Nov. 1929.

The question of malignancy of these growths is very difficult to determine, because of variations in histological appearances of an original tumour and its recurrence and also variations depending on the site of origin of a given section of the same tumour. The writer has therefore come to rely solely on clinical (cystoscopic) data. Those growths regarded as simple are dealt with by transurethral methods, and the malignant cases are treated by open operation following the technique of Bentley Squier.

The cystoscopic appearance is that of clumps of dainty mobile villi, a shade darker in colour than the vesical mucosa. A benign papilloma when still small is an elegant object, whose attractive appearance would seem to preclude its eventually malign propensities. The longer and more delicate its villi the more benign the growth. The less these features are in evidence, the more it is suspect. In rare instances long fragile streamers float in the bladder fluid like seaweed in a rock pool. As the papilloma grows, however, this mobility and elegancy recede, the villi becoming more stunted and swollen, their epithelium becoming more granular and losing its lustre. Many growths indeed when quite small show this coarser exterior and must already be regarded with misgiving. Finally, surface necrosis appears, a feature which is indicative of malignancy.

The villi of a benign growth are clothed with an epithelium which in arrangement imitates that of the normal bladder. It therefore has a similar colour and reflects light well. In the less benign varieties the layers are thicker and have a coarser, paler appearance. They are less evenly arranged, stain less uniformly and the epithelium or adjacent villi coalesce.

The reaction to treatment by diathermy is one of the most important considerations in cases of doubtful simplicity; it is preferable to removal of sections and has come to be known as the therapeutic test. When cystoscopic observation is impossible due to the bladder being filled by growth, when owing to cystitis or infiltration it is small and intolerant, or when hæmorrhage is severe and intractable, cystography may be a great aid. Though not supplying as detailed information as one gains with the cystoscope, it will often confirm our suspicion that a tumour is present and indicate its size and position. Moreover, by giving us an outline of the bladder one can judge the likelihood of infiltration, and there are certain irregularities that one learns to recognize as characteristic of malignancy. Attention is directed to the fact that a cystitis often precedes the tumours so frequently seen in aniline dye workers. The cystoscopic picture presents a bright erythema with a tendency to mottling. It is more brightly red than the usual colour in cystitis and the surface is entirely free from the exudate seen in the septic type. A growth frequently follows this cystitis, but if the patient changes his occupation the symptoms usually disappear and no growth occurs.

N. E. BERRY

OPHTHALMOLOGY

A Brief Historical Sketch of Native Ophthalmology in China. Pi, H. T., *Nat. Med. J. China* **15**: 604, 1929.

Ophthalmology in China had its beginning over 4,000 years ago, in the prehistoric times of the three legendary rulers. Huang Ti is the last of the three, and it was in his reign, dating from 2679 B.C., that the most important of all treatments of eye diseases, the needling method, was originated. Books on medicine in general, including eye diseases and their treatment, were also written for the first time. It is well established that the actual time of the beginning of Chinese ophthalmology, was somewhere near the time of Confucius, or shortly after. "The Importance of Needling," a product of the Han Dynasty, 250 B.C., may be considered the first of the reliable sources on ophthalmology. Next came the famous Wang Wei Teh of the Sung Dynasty, who took special pains in gathering information on needling and finally succeeded in producing his well known original brass model of the human body for that purpose. A more comprehensive work on needling was produced by Chin Hsien. This has become the first book of reference on this subject for the native oculists to-day. The book is well written, deals with almost all aspects of ophthalmology, and is richly illustrated with pictures and drawings. The first book devoted exclusively to diseases of the eye appeared at a much later time, 620 A.D. Eighty-one kinds of eye diseases are carefully described, numerous prescriptions are given and the method of needling, cauterization for entropion, and needling of cataracts are fully described. Necessary prayers are also discussed. Pi cites the following case from this book: "Windy Granules of Palpebral Conjunctiva, trachoma (?) is caused by the increase of blood of the whole body, and the over production of heat of the stomach and spleen. The granules grow in both upper and lower palpebral conjunctiva in the appearance of sago. Pannus (?) and ulcers (?) are the most common complications in the black eye-ball (cornea) caused by rubbing of the granules. Treatment is puncture or better still cauterization of the granules with a fine needle three or five times. As this disease is due to the heat of the spleen, a

XUM

prescription is added which may be of great use in driving the heat away from the said organ."

"The Most Complete Eye-Book", was written at the end of the Ming Dynasty, in 1628 A.D. It is composed of six volumes dealing with 106 kinds of eye diseases, and their treatments by various methods and prescriptions. Almost all native specialists in ophthalmology to-day look to this book for guidance. It is noteworthy that a procedure for excision of pterygium is minutely described. A date of good-luck is always chosen beforehand, and during convalescence the following food should not be taken: fish, fried noodle, chicken, goose, donkey and horse-meat, pork, dog-flesh, onions, garlic, etc.

Undoubtedly the practice of ophthalmology in China has been a part of general medicine since the time of Emperor Huang Ti, 2679 B.C. This article gives but a mere outline of the outstanding facts and features of old Chinese ophthalmology, dealing chiefly with the leading articles available to the general readers. Undoubtedly there are many other sources of information and knowledge which should be investigated.

S. HANFORD MCKEE

Familial Angiomatosis of the Retina and Cerebellum. Lindau's Disease. Moller, H. U., *Am. J. Ophth.* **13**: 275, 1930.

This disease, which is practically uniformly fatal unless the diagnosis is made sufficiently early to save the patient's life, although at the cost of his sight, has been reported by Moller as occurring in a man, three of his children, and in two granddaughters by two of his affected sons. The disease is characterized by angiomatosis of the retinæ, by brain tumour situated in the cerebello-pontine angle, and by familial incidence. All the members of the family here reported had died of the disease except one, upon whom operation had been performed sufficiently early to save her life. It is a relatively rare disease, the author having found but 60 cases reported in the literature.

MADGE THURLOW MACKLIN

HYGIENE AND PUBLIC HEALTH

Outbreak of Psittacosis in Canada. Chisholm, A. R., *Canad. Pub. Health J.* **21**: 7, 320, 1930.

Seven cases are reported in this communication by the epidemiologist of the Provincial Board of Health of British Columbia. All the patients became ill within a period of about 10 days, in April last, and all had been in contact with parakeets which had been landed at Vancouver late in March and had later shown signs of sickness. Of 24 birds that could be traced, 4 had been sick and of these 2 had suffered with diarrhœa and had died. Three of the cases reported by Chisholm belonged to one family. There was no fatality. The incubation period was about 12 days. The longest illness was 24 days; the shortest, 7 days; the average duration being 16 days. The condition was characterized by sudden onset, with severe frontal or occipital headache, soreness and stiffness of the neck, high fever, chills and sweating, troublesome cough (usually non-productive). There was little disturbance of the respiratory or pulse rates. Congestion of the lungs, which went on to consolidation in one case, was noted in the cases which came under medical care; in several cases there was diarrhœa; in all, anorexia, coated tongue and fœtid breath.

W. H. HATTIE

Technical Supervision in the Production of Milk. Hardenbergh, J. G., *Am. J. Pub. Health* **20**: 705, July 1930.

In the supervision of milk supplies, as carried on to-day, there are two objects in view—the safeguarding of the public health, and the improvement of the quality of the supply. In respect of the public health aspect of the matter, consideration must be given to bovine diseases directly transmissible to man, and to human diseases transmissible directly or indirectly by milk. The basic solution of the prevention of bovine tuberculous infection in man rests in the eradication of the bovine diseases. Pasteurization has played a big part in lessening infection in man, but in a fundamental sense it serves only as a substitute for better means. It must not be accepted as replacing proper standards of health for dairy herds and dairy employees, and standard methods of dairy sanitation. In respect of *B. abortus* infections, our knowledge is very indefinite. While, doubtless, infections have resulted from drinking raw milk, deliberate attempts to produce human infection through the ingestion of milk heavily inoculated with the *B. abortus* have failed conspicuously. However, so long as there is reason to suspect milk, adequate safeguards must be adopted. We may pasteurize the milk or eliminate infection from the herds. The agglutination test is reliable, and the removal of reacting animals will suffice to assure non-infective milk. (Hardenbergh, who is a veterinarian, does not believe that cows which shed the *B. abortus* in milk will fail to react to serum tests).

First among the human diseases transmissible through milk comes typhoid fever. Here the human carrier is the element which must be eliminated. Milk has little, if any, bactericidal action against the typhoid bacillus, and entire reliance cannot be placed upon pasteurization,

as efficient pasteurization has been nullified by a carrier who operated a bottling and capping machine.

Septic sore throat and scarlet fever present two possibilities in relation to milk infection; the infection may be direct, as from a dairy employee, or it may be indirect, as through infection of a cow's udder by a carrier. Direct infection is unlikely to be gross enough to cause an extensive epidemic, as dilution is usually considerable, and milk is decidedly bactericidal to at least some streptococci of human origin. On the other hand, when the udder is infected, epidemics do occur, particularly in the case of small herds where dilution is less than in large herds.

Pasteurization, properly applied, has a place and a value in the prevention of milk borne diseases that must be recognized, but it does not remove the causes and defects which make it necessary. The ideal to be sought is the production of a milk embodying at the source the highest possible attainments in safety, cleanliness and nutritional values. This requires medical supervision of dairy employees, veterinary supervision of the herd, laboratory supervision of employees, cattle and milk, and nutritional control. This cannot be considered feasible in the case of the small farm units which now characterize the dairy industry, and consideration is being given more and more to the development of dairy units of sufficient size to permit of complete technical control being an economic success.

W. H. HATTIE

Care of Communicable Diseases in General Hospitals. Wallace, J., *Am. J. Pub. Health* **20**: 722, July 1930.

Inasmuch as the American Hospital Association adopted this year a resolution favouring hospitalization of communicable diseases in general hospitals, particularly in communities of 100,000 population or less, this paper of the Associate Field Director of the committee in administrative practice of the American Public Health Association is of special interest. His investigation shows that in quite a large number of cities a section for infectious diseases is an integral part of a general hospital, that there are no more cases of cross-infection where communicable diseases are cared for in general hospitals than occur in special contagious disease hospitals, and that the cost of care is generally much less in the general than in the special hospitals. When the communicable disease section is a component part of the general hospital there is a constant urge and stimulus in that section to maintain it at the high standard followed in other sections of the hospital. Such a standard can scarcely be reached, unless at great cost, in the small special hospital that provides sufficient accommodation for smaller communities. Prejudices against the erection of infectious disease hospitals within city limits have largely disappeared. Similar prejudices have operated against the construction of communicable disease sections in connection with general hospitals, but all these prejudices are equally groundless and should not be allowed to weigh against the advantages which result from such association.

W. H. HATTIE

The Inheritance of Longevity. Stat. Bull. Metrop. Life Ins. Co., 11, No. 6, 1930.

The question as to which factor, heredity or environment, is the more important with respect to longevity has long been of interest to biologists and hygienists. Insurance records indicate that heredity has an important influence on longevity. The death rate of those with a favourable parental longevity is nearly 20 per cent less than those whose parents died young, notwithstanding the fact that the latter group has been more carefully selected for insurance on account of the unfavourable family history. At age 25 those with long-lived parents have an expectation of life of nearly two and a half years greater than those with short-lived parents, and this difference persists into the older ages, so that at age 60 the former group has a superior longevity of over a year greater than the latter. The gain in expectation of life from good heredity, however, is not nearly so large as that obtained by the improvement in social and health conditions in recent years. "From the point of view of longevity, environmental influences are still more powerful than heredity, important as that may be".

FRANK G. PEDLEY

The Decline in Mortality from Acute Rheumatism. Stat. Bull. Metrop. Life Ins. Co., 11, No. 3, 1930.

Specialists in the diseases of the nose and throat who are accused of being over-zealous in the removal of tonsils and adenoids will find some comfort in the statistics of rheumatism which have been published by the Metropolitan Life Insurance Co. Since 1911 there has been a steady drop in the death rate from rheumatism of the industrial policy holders of the Company. In 1911 the death rate from acute rheumatism was 7.7, in 1929 it was 3.2 per 100,000. An almost identical drop has occurred in the population included in the United States Registration Area.

This decline in mortality from rheumatism has been accompanied by a drop in the death rate from heart disease in all age groups up to

XUM

45 years. The gross death rate from heart disease, however, has increased; but this is due to the rather marked increase in heart disease deaths in the older ages.

FRANK G. PEDLEY

Physical Impairments and Occupational Class. Differential Rates Based upon Medical Examination of 100,924 Native-Born, Adult White Insured Males. Sydenstricker, E., and Britten, R. H., *Pub. Health Rep.* **94**: 1927, August 22, 1930.

For a number of years the Life Extension Institute has been collecting data on the physical characteristics of large numbers of presumably healthy individuals. Much of the information recorded by examiners is coded and transferred to punch cards for mechanical tabulation. In this way a great deal of accessible information has been acquired regarding supposedly healthy individuals, information which is probably more accurate than that obtained in army examinations, and which deals with a group which has a more scattered age distribution.

An analysis of 100,000 of these records is presented in this study, particular attention being paid to the correlation of physical impairments with occupational class. In the routine physical examination many observations are not quantitative. Thus the estimation of hearing loss fluctuates markedly with the examiner, unless the audiometer is used, and the determination of tonsil infection, cardiac defects, enlargement of inguinal rings, flat feet and the like necessarily varies with different examiners. It is questionable whether the findings of one examiner in these matters should really be compared with those of another.

Some of the physical defects which could be determined quantitatively are of interest. For example the number of individuals with imperfect vision is very considerable. Forty-five per cent of the professional group under 40 years of age had defects of vision, and a third of these had not had these defects corrected. Of the skilled trades group 33 per cent had defective vision, two-thirds of which were not corrected. Over 40 the number of individuals with defective vision was, of course, much greater. From 10 to 17 per cent of the group suffered from definite hearing loss. It is of some interest to note that the skilled trades showed a definitely higher incidence of deafness than the other groups. Whether this is due to occupational noise is a matter for surmise. The teeth examinations do not support the popular slogan that four out of five have pyorrhœa. Actually the highest incidence of pyorrhœa occurred in the agricultural groups, and was 9.5 per cent. Many other defects such as cardiac, abdominal, genito-urinary, etc., are discussed.

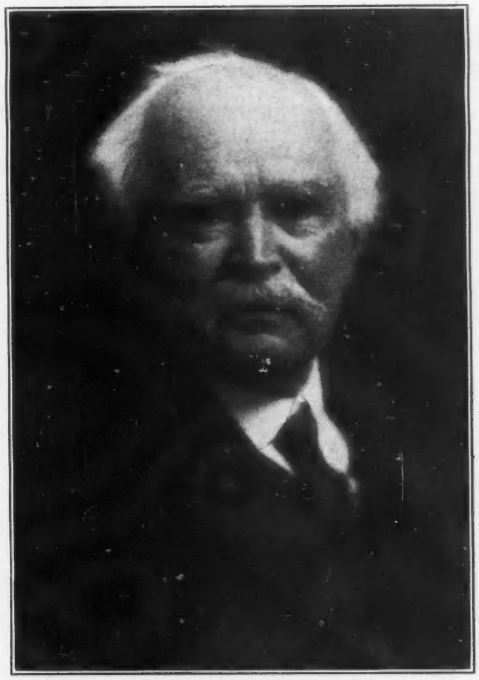
FRANK G. PEDLEY

RATIONAL TREATMENT OF ARTERIAL HYPERTENSION.—Soma Weiss and Laurence B. Ellis discuss the etiological factors, the mechanism of the circulation in hypertension, specific drug therapy and the management of the patient. The severity and the clinical progress of the hypertension, the nature of the patient's occupation, and his economic status will influence the medical advice. Patients with uncomplicated hypertension tolerate moderate exercise well and react to such exercise with the same qualitative physiological response as do normal individuals. It is necessary, however, to rearrange the life of the patient in such a manner that he may learn to relax. Night work should be avoided. The patient should take, if possible, a midday rest of one or two hours' duration and should sleep from eight to ten hours regularly. Week ends should be spent in quiet relaxation and in engaging in some light sport or hobby. In more severe cases, rest periods of from three to ten days should be taken several times a year. Strenuous sports, such as tennis, swimming or squash, should be avoided. Excesses, in general, are harmful. By far the majority of the patients with severe hypertension have never acquired the ability to perform their daily activities routinely. If psychic trauma is suspected, a proper psychotherapeutic approach and influence on the patient will give most gratifying results both in gaining the confidence of the patient and in beneficially influencing the hypertension. Optimism should dominate the attitude of the physician. No special diet has proved of definite value. As a general preventive measure, it is advisable to outline a well balanced diet which contains enough protein to supply about 10 per cent of the total calories. Salts should be kept relatively low by using only a small amount in cooking and none at the table. Spices should be avoided. If the patient is overweight, the total calories should be below the requirement. A gradual loss of weight produces a most gratifying effect both on the symptoms and on the blood pressure. Water intake should be free. The beneficial effect of drinking large amounts of water has not been established, and, on the other hand, the cardiac work may become increased appreciably by a large fluid intake. The use of tobacco is not generally contraindicated in arterial hypertension, unless, as is sometimes observed, patients show a hypersensitivity to it by an accentuation of symptoms and an elevation of blood pressure. The bowels should be kept free and daily action without strain assured. Magnesia magma and phenolphthalein are useful laxatives in keeping the bowel function normal. Not infrequently the establishment of a regular regimen is followed by definite improvement in the general symptoms and a lowering of the arterial pressure. The beneficial effect of balneotherapy is through its action on the central nervous system. The baths should be moderately warm and not below 34° C., for baths below this temperature elevate the blood pressure.—*J. Am. M. Ass.* 95: 846, Sept. 20, 1930.

Obituaries

Dr. Adam Henry Wright. "Full of years, full of honours, beloved of his students, admired by his confrères and a host of friends, Adam Wright has passed". In these few words the octogenarian life, of almost continuous service, of Adam Henry Wright is well summed up. In the October issue of the *University of Toronto Monthly* the milestones of that long journey have been fairly indicated, and the story told. But Adam, and many of us of an earlier day, sat under the Reverend John McCaul, and so would naturally say with Horace: *Quis desiderio sit pudor aut modus tam cari capitis?* which says so little, but implies so much.

Dr. Wright was born near Georgetown, Ont., in 1846, the son of Henry Wright, and his mother was a Miss S. J. Webb, of Colborne where he began practice. After three years there, having meanwhile been married, in 1874, to Miss Flora Cumming of Trenton, he went to London for post-graduate study, where he took the M.R.C.S. Eng. Returning to Toronto in 1877 he began practice there and so continued until the end, an unusual period of three and fifty years of public service.



Dr. Adam Henry Wright

Natus 1846, April 6. Obit Aug. 20, 1930.

While a student in University College he displayed decided athletic propensities and prowess, and, indeed, but for his modesty, might have claimed to be pentathlos. "He graduated in 1866, was lieutenant in the University Corps ('K' Company, Q.O.R.) and was in action at Limeridge in the Fenian Raid" (as was also Professor W. H. Ellis, who was taken prisoner, and reported that he was most hospitably treated by "General" John O'Neil, commanding the invading force). "In football he was present on many a hard fought field, in cricket quick and active, a good point or cover point or slip, a 'barn door' at the wicket, with a caution that made him the despair of bowlers". He played tennis too, and bowled upon the lawn as well as the crease, and could skip a rink upon the ice.

As has been said, Dr. Wright practised for a time at Colborne, not far from Trenton, where he had been principal of the High School for some time, and where he developed to the full his remarkable ability in teaching which stood him in such good stead in later years when he became a "Doctor" in word and in deed, and an ornament to his Alma Mater. Taking him as a standard, I admit there has been a plentiful lack of such, alike in wisdom and in wit. Shortly after coming back from England he joined the staff of the Toronto School of Medicine, beginning with Histology and going on to the chair of Obstetrics and Diseases of Women and Children and doing clinical work as well, and, in the latter part of the life of the Toronto School of Medicine, discharging the duties of Assistant Secretary, too. So it was natural that when the Faculty of Medicine was re-established and the members of the School absorbed therein, he became Secretary of the Medical Faculty, and that when Professor Uzziel Ogden resigned the Chair of Obstetrics he was in the succession thereto. His fame in that Department spread far and wide; and when Dr. Michael Barrett (may his tribe increase!) founded the Women's College Dr. Adam Wright was appointed to that Chair and also to the original Board of Directors. He was always most diligent, thorough and painstaking in the discharge of duty.

Naturally most hospitable he regarded his students evidently with a paternal eye, and those of them still living will recall the famous Saturday night parties at his house in St. James's Square, at which festive occasions Lady Bourinot, recently deceased, was always a source of attraction and success. But, of course, all things come to an end; and before this story does I must venture to recall another kind of party which commemorated Dr. Wright's University Jubilee. It was held at the York Club on November 29, 1912. Who were present doesn't signify much, for all were friends; but Prof. W. H. Ellis was Poet ("in whom alone of men is the truth innate"), and he read a poem written for the occasion. Two stanzas not far apart will suffice:—

"Mutantur", Adam, "tempora"
Mutamur atque nos
And now we're not a bit afraid
To tell just how the world was made
In detail and in gross.

. . . . .

Well times may change, and we may change,
But find him when I can,
I'll drink a health to one who's stood,
For all that's honest, kind and good;
So here's to you, Old Man!

For many years Dr. Adam Wright was a Member of the Senate, and of the old University Council so long as it lasted. Among other posts of responsibility may be mentioned the chairmanship of the Provincial Board of Health, in succession (1911) to Prof. Wm. Oldright, which he retained until superannuation, when the present Provincial Department of Health was instituted. In 1900 he was elected President of the Ontario Medical Association, and, in 1909, of the Canadian Medical Association, and of the American Association of Obstetricians and Gynæcologists, 1890. He was a charter member of the Toronto Medical Society and of the Academy of Medicine, its successor, and he was made an Honorary Fellow thereof. Dr. Wright was the author of a textbook on obstetrics; and Prof. Thomas Stephen Cullen, an old pupil of his, took occasion to say when receiving an honorary degree of LL.D. in Convocation Hall on September 16th last, how highly prized and valued his instruction had been. He was also a veteran editor of more than one medical journal with attendant editorials and reviews.

His end was peace, for without pain or struggle or consciousness of parting, on August 20th, he slowly

XUM

passed to where beyond these voices there is "the peace that passeth understanding". Four days later he was interred in Mount Pleasant Cemetery, and after the Committal Service half a dozen of us, old fellow students, including the Chancellor of the University, were standing around the grave, and Sir William Mulock said "There is one thing to be said about Adam,—One always knew where to find him, and that what he said he meant." He was ever faithful to his friends and steadfast to his purposes and principles. Mrs. Wright predeceased him two years ago. Two sons, one in the profession, and three daughters survive.

And now to make an end, I quote again from Horace's 24th Ode of the First Book, with which I began:

Multis ille bonis flebilis occidit,
Nulli flebilior, quam tibi, Maecenas.

With due apologies, of course, for the last hirpling foot, but it fits the Chancellor as benefactor of literary people and his lifelong friend! IRVING H. CAMERON

Col. George S. Rennie, active in the public life of Hamilton for many years, and representative for the riding of Hamilton East in the House of Commons, died in the general hospital early on October 13, 1930, following an attack of pneumonia.

Col. Rennie was born in Barton Township on July 23, 1866, the son of Alexander Rennie and Gertrude Catherine Serves, a United Empire Loyalist.

After passing through the Hamilton public and high schools, he studied medicine at Trinity University, graduating in 1899. After this, he went abroad for two years, studying in London, Edinburgh, Paris, Berlin and Vienna. In London he took the diploma of licentiate of the Royal College of Physicians and at Edinburgh, Licentiate of the College of Surgeons.

Col. Rennie had for some years been chief coroner in Hamilton, as well as medical adviser for several large industrial concerns and insurance companies.

Taking up military work more or less as a hobby, he established a high reputation as an organizer. After service in the Canadian Army Medical Corps, he qualified at Kingston for field officer's rank in the artillery just prior to the war and organized the 33rd howitzer battery from which was recruited the 13th field battery of the C.E.F. which he organized and prepared for overseas service. He was asked by Maj. Gen. Sir Sam Hughes to return to the medical corps, where it was felt his services would be of more value, and he went overseas with Number 2 Canadian General Hospital which he organized. In England he was appointed Assistant Director of Medical Services for the Shorncliffe area, and later Assistant Director of Medical Services for the Dover area in the Imperial forces.

In recognition of his services, the Imperial authorities promoted him to a full colonelcy, and he was made commanding officer in France of the Le Tréport hospital area, with over 12,000 persons under his command.

Three times he was mentioned in despatches and was given the order of St. Michael and St. George (C.M.G.).

Immediately after the war, Col. Rennie reorganized the 8th Field Brigade Artillery, and at the time of his death was O.C. 8th Reserve Brigade.

He entered Parliament as a Conservative in 1926, to represent Hamilton East, when Maj.-General Hon. S. C. Mewburn retired, and in the recent federal election was re-elected by an overwhelming majority.

Col. George S. Rennie

Dr. Henry Mortimer Cunningham. The death occurred on September 6, 1930, of H. M. Cunningham, M.D., of Vancouver, B.C. Dr. Cunningham was born in Victoria, B.C., on November 6, 1865, and was a son of Thomas Cunningham, formerly Dominion Fruit Inspector for British Columbia. He received his education at Columbia College, New Westminster and the University of Toronto, later going to New York, where he received his medical degree at Columbia University in 1895. Dr. Cunningham engaged in general practice at DeTour, Mich., U.S.A., at that time an extremely isolated community where he was compelled to rely upon his own resources in an exceedingly strenuous country practice. There can be little doubt that those early years laid the foundation of that resourcefulness and excellent judgment which was so characteristic of his work in later years.

Following three years of general practice he devoted himself to the study of the eye, ear, nose and throat, later practising in Mansfield, Ohio, and Marquette, Mich. In 1916 he returned to his mother province and since then has practised his specialty in Vancouver, attaining an outstanding position. Dr. Cunningham acquired unusual skill in the removal of foreign bodies from the air passages, and his collection of these is uncommonly varied and numerous. During his years in Vancouver he endeared himself to the members of the profession, taking an active part in the affairs of the Vancouver Medical Association.

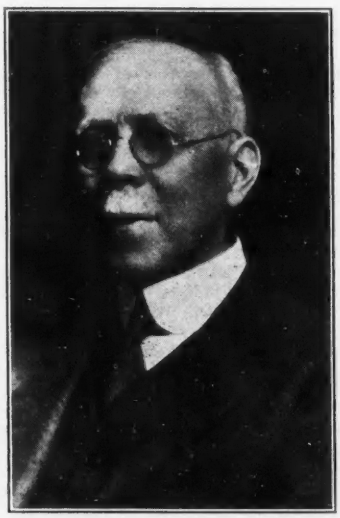
He is survived by his wife and two sisters, Mary and Ethel Cunningham of Vancouver, and by one brother, Dr. Thomas Cunningham, of California.

The funeral took place on September 7th under the auspices of the Masonic Fraternity, and was largely attended by the medical profession.

C. H. BASTIN

Dr. Frederick Eugene Gullison, of Yarmouth, N.S., died on October 3, 1930, after a protracted illness. Dr. Gullison graduated at McGill in 1916, and about a year afterwards began practice at Yarmouth. His pleasant manner and kindly disposition, combined with professional ability, soon gained for him the confidence and respect of the community, and he enjoyed a large practice. In his death at so early an age the town of Yarmouth has lost a citizen of much usefulness and undoubted promise.

Dr. William Lockwood T. Addison. One of the kindliest and most beloved of the medical profession in Toronto died there on September 4, 1930, as a result of an illness which had threatened him for many years. Interested in the question of high blood pressure from both the clinical and pharmacological side, Dr. Addison's contributions had attracted considerable attention, particularly on account of his theories as to the action of potassium salts. A special clinic for the study of the question of hypertension was



Dr. William Lockwood T. Addison

under his supervision for some years in the out-patient department of the Toronto General Hospital. Few of his associates realized that in the study of these problems he was seeking how to circumvent his own assailant, and his many friends, in the profession and out, can hardly grasp what it had meant for him to carry on cheerfully, with the threat always present to be guarded against. The end came suddenly, probably from a cerebral hæmorrhage.

Born in Horning's Mills, the eldest son of the Rev. Peter Addison, Dr. Addison received his early education at Newcastle and at Uxbridge, graduating finally from the University of Toronto in Arts, in 1892, and in Medicine in 1895. Interested in chemistry, bacteriology and pathology, he was nevertheless compelled to begin the active practice of medicine in order to make a start in life. His knowledge of the sciences stood him in good stead and he was able to take up a position in one of the large institutions in Toronto and at the same time continue a general practice. His bacteriological training led him early into the question of public health, particularly that of milk inspection, and it is largely as a result of his energetic work in this line that the milk supplies of the city of Toronto are now so well controlled.

His association with the Toronto General Hospital has been mentioned and his work on hypertension has been referred to. His careful studies in pharmacology and bacteriology speak for the well gauged mind which he was able to bring to bear on many problems. An enthusiast in many directions he took an active part in church work and in medical politics. He was early associated with the Medical Council of Ontario and was at one time its much respected president.

N. B. GWYN

Dr. Edward Allan, of Arthur, Ont., died on September 30, 1930, in his eighty-sixth year. He was a graduate of the University of Toronto (1869).

Dr. William Frederick Clarke, of Berkeley, Cal., U.S.A., formerly of Toronto, died on September 15, 1930.

Dr. Théodule Cypihot, one of the oldest citizens of Ste. Cunégonde, Montreal, died at his residence on September 24th, after an illness of 15 months. Dr. Cypihot was born in Montreal on April 26, 1860. He was educated at the College of Ste. Therèse and studied medicine at Victoria College, whence he graduated at the age of twenty. He practised first in Vermont and then in Ste. Cunégonde. He was commissioner of the municipal court, school commissioner, and was mayor of Ste. Cunégonde at the time of its annexation. He was one of the founders of L'Alliance Nationale, and was one of the medical referees of this society up to the time of his death. He was also a governor of the Notre Dame Hospital.

Dr. William Spencer Harrison, of Overton, Nevada, U.S.A., formerly of Toronto, died on September 12, 1930, aged 66 years. Dr. Harrison graduated from Trinity Medical College, Toronto, in 1884, and the University of Toronto in 1919.

Dr. Mary Evelyn Johnston, of the staff of the Mountain Sanatorium, Hamilton, Ont., daughter of Mr. and Mrs. W. H. Johnston, Exeter, Ont., died at the Toronto General Hospital on September 23, 1930. She was a graduate of the University of Toronto (1917).

THE CALCIFYING ACTION OF IRRADIATED ERGOSTEROL.—Pfannenstiel demonstrated the remarkable calcifying property of irradiated ergosterol when given in large, almost subtoxic, doses, and this has led to a study of the action of this substance on the evolution of tuberculous lesions. Levaditi, Li Yuan Po, and Spiess have recently published the results of their experiments on rabbits, and A. Policard, Paupert-Ravault, and P. Barral now report the results of similar experiments on guinea-pigs. The animals were inoculated with the same strain of *B. tuberculosis*, and were given varying doses of ergosterol in the form of vigantol or sterogyl, which were administered both immediately after the inoculation and after the lapse of some time. It was found that the irradiated ergosterol caused, but only in large doses, an accumulation in the tuberculous lesions of fixed mineral matter, composed mostly of calcium salts. The calcification was produced particularly in the caseous areas, and only by employing such doses as would cause calcareous deposits in normal organs. The present authors conclude that this action of irradiated ergosterol has a certain importance, and that some day the calcification of pulmonary, ganglionic, and osseous tuberculous lesions may be considered. They agree with the previously mentioned investigators that the employment of such an active substance necessitates great prudence. The cachexia, loss of weight, and the heterotopic calcifications it produces emphasize the scrupulous care necessary in its therapeutic use in large doses.—*C. R. Soc. de Biologie*, p. 633, June 20, 1930.

XUM

News Items

BRITISH EMPIRE

Medical Council of Canada

The list of successful candidates who wrote on the examinations of the Medical Council of Canada was made public on October 16th by Dr. Fenton Argue, registrar. The examinations were held in Montreal and Winnipeg on October 7. The names follow:—

Sidney Aiken, Toronto; William Campbell Arkinstall, Dunvegan, Ont.; Robert Randolph Barnes, Ottawa; Trevor Robinson Beckett, Kemptville, Ont.; Sara Eitchis, Montreal; Symon Gregor Fine, Toronto; Joseph Pliny Fleming, Toronto; Doris Claudia T. Foster, Bowmanville, Ont.; Archibald Aaron Gray, Vancouver; John William Acheson Greig, Seaforth, Ont.; Donald Gordon Hodd, Harrington Harbor, Que.; Charles Emile Lacerte, Yamachiche, Que.; Charles Emile LaFrance, Hawkesbury, Ont.; Thomas Mortimer Ling, London, England; John Francis McCullough, Sudbury, Ont.; Joseph Richard McRae, Toronto; Stanley McTavish, Alvinston, Ont.; Carl Edward Lynn Morrow, Metcalfe, Ont.; David Joseph O'Connor, North Bay, Ont.; George William Kyte O'Toole, St. Peter's, Nova Scotia; James Robert Parmley, Penticton, B.C.; Ivan Eric R. Parris, Brown's Town, Jamaica, B.W.I.; Walter Mudie Paton, Rochester, Minn.; Margaret Knight Patterson, Newmarket, Ont.; Joseph Arthur Amedée Piché, Gravelbourg, Sask.; Stanley Frederick Service, Clifton Springs, N.Y.; George Beaumont Sexton, Strathroy, Ont.; Carl Smith, Kitchener, Ont.; Frederick McIver Smith, Westmount, Que.; Nicholas Sole, Budapest, Hungary; Douglas Walter Sparling.

Primary Examinations for the Fellowship of the Royal College of Surgeons in Canada

Under an agreement between the Canadian Medical Association and the Royal College of Surgeons of England, which was put into effect last year, primary examinations for the F.R.C.S. are now held in Canada. The second examination was held at McGill University on September 2, 3 and 4, 1930.

Dr. William Wright, Dean and Professor of Anatomy in the London Hospital Medical School, and Dr. John Mellanby, Professor of Physiology in the University of Manchester, were the examiners, whilst Professor S. E. Whitnall and Professor John Tait, of McGill University, acted as assessors. The Superintendent of the examination was Professor J. C. Simpson of McGill.

Thirteen candidates appeared for examination. Of these, eight were graduates—three from India, two from Canada and one each from England, Australia and the United States. The other five were undergraduates, three from the University of Toronto, one from Dalhousie and one from McGill. Three of the candidates were successful in passing the written and viva voce examinations in both subjects—Anatomy and Physiology.

Fire Hazards from Film Explosions

At the annual convention of the Dominion Fire Prevention Association, held in Ottawa on September 30th, it was announced that hospitals generally are 100 per cent safe from x-ray film explosions, such as caused heavy loss of life at Cleveland some months ago. Reporting on film exchanges, Col. John A. Cooper of Toronto, president of Motion Picture Distributors and Exhibitors of Canada, said there had been a notable improvement in the handling and storage of films.

Canadian Dental Association

The House of delegates of the Canadian Dental Association, in convention at the Windsor Hotel, Montreal, on October 17th, elected their officers for the coming year. The association will be headed by Dr. A. W. Faulkner, of Halifax, succeeding Dr. M. H. Garvin of Winnipeg. The *President-Elect*, who will succeed to the president's office next year is Dr. Philippe Hamel, Quebec; Dr. J. Stanley Bagnall, Halifax, was re-elected *Secretary-Treasurer;* the *Board of Directors* is as follows: Dr. A. W. Faulkner, Halifax; Dr. D. P. Mowry, Montreal; Dr. G. L. Cameron, Swift Current; Dr. M. H. Garvin, Winnipeg; Dr. L. D. Hogan, Walkerville, Dr. J. F. Morrison, Winnipeg, and Dr. J. Stanley Bagnall, Halifax.

Plans were discussed for the participation of the Canadian Dental Association in the International Dental Congress, to be held in Paris, France, in 1931. Dr. A. E. Webster, Toronto, and Dr. Ernest Charron, Montreal, were appointed delegates to represent the Canadian association.

Committees were appointed to begin arrangements for the joint convention of the British, Canadian and Ontario Dental Associations, to be held in Toronto in 1932. It is expected that delegates from other British Dominions will also attend.

Births and Marriages in Canada During August

Births in Canada during August in cities of 10,000 population or more numbered 6,590, according to a preliminary compilation by the Dominion Bureau of Statistics. This showed a decline of about 1 per cent from July. In the Prairie Provinces, births decreased 16 per cent, in British Columbia 9 per cent and in Ontario 3 per cent. In the Maritimes, however, there was an increase of 15 per cent and in Quebec an increase of 8 per cent. Figures for the smaller urban centres and for the rural areas have not as yet been made available.

While births showed a slight decrease, marriages were 3 per cent higher, the total for August being 3,200. In Quebec the increase was 24 per cent, in the Maritimes 20 per cent and in British Columbia 9 per cent. In Ontario there was a decrease of 5 per cent and in the Prairie Provinces 10 per cent.

Primary Examination for the Fellowship of the Royal College of Surgeons in Australia

In a recent issue of the *Medical Journal of Australia* reference was made to arrangements that had been made between the College of Surgeons of Australasia and the Royal College of Surgeons of England whereby the primary examination for the Fellowship of the Royal College of Surgeons was to be held in Australia next year. It was stated that the examination would take place provided twenty-five candidates presented themselves. The Council of the Royal College of Surgeons has recognized the desirability of making definite arrangements and has resolved that the examination is to be held in August or September, 1931, whatever the

number of candidates may be. Up to the present time more than twenty applications have been made by prospective candidates. It is hoped that the decision to hold the examination will result in further applications being made.—*Med. J. Aus.* **2**: 337, 1930.

Swift's Asylum, Dublin

Another step of progress has been made by the governors of St. Patrick's Hospital, commonly known as "Swift's Asylum," in the opening recently of a new wing by the Governor-General. The hospital was founded in 1745 under the will of Dean Swift, who left almost all his property for the purpose. As he put it in verse some five years earlier:—

"He gave the little wealth he had
To build a house for fools, or mad,
And showed, by one satiric touch,
No nation wanted it so much."

As a matter of fact it was the first hospital for the insane to be founded in Ireland, and it remained the only one for some 70 years. The institution has always kept abreast of the best knowledge of the treatment of the insane and, like most other institutions of the kind, it has undergone great development in the last 30 years, during which time it has been under the medical superintendence of Dr. R. R. Leeper. In recent years a country branch has been established in a beautiful country house near Lucan, some half dozen miles from Dublin.

GREAT BRITAIN

The Numbers of the Medical Profession

In order to present a general view of the numerical strength of the medical profession during the past half-century we have extracted from the records and set down below in parallel columns the total number of names in the *Medical Register* on December 31st of each year, and the numbers added annually by registration between 1880 and 1929.

Numerical State of the "Medical Register."

Year	Names added in Year	Total No. on Dec. 31	Year	Names added in Year	Total No. on Dec. 31
1880	1,123	22,936	1905	1,240	39,060
1881	1,053	23,275	1906	1,197	39,529
1882	1,171	23,801	1907	1,221	39,827
1883	1,304	24,517	1908	1,137	40,257
1884	1,388	25,321	1909	1,143	39,818
1885	1,377	25,998	1910	1,062	40,483
1886	1,431	26,452	1911	1,042	40,913
1887	1,531	27,246	1912	1,157	41,439
1888	1,184	27,939	1913	1,168	41,940
1889	1,305	28,348	1914	1,433	42,378
1890	1,266	29,163	1915	1,526	43,225
1891	1,345	29,555	1916	1,202	43,481
1892	1,513	30,590	1917	1,134	43,819
1893	1,579	31,644	1918	1,077	43,926
1894	1,426	32,637	1919	1,322	44,510
1895	1,446	33,601	1920	1,457	44,761
1896	1,385	34,478	1921	1,760	45,408
1897	1,230	34,642	1922	1,983	46,476
1898	1,210	35,057	1923	2,482	48,140
1899	1,351	35,836	1924	2,796	50,035
1900	1,345	36,355	1925	2,570	51,738
1901	1,318	36,912	1926	2,120	52,614
1902	1,275	37,232	1927	1,941	53,769
1903	1,233	37,878	1928	1,656	54,336
1904	1,168	38,492	1929	1,410	54,870

The varying proportion of registered medical practitioners to population during the period under review is shown in the following table. This sets out the total population of the British Isles at each decennial census since 1881, and the number of names on the *Register* in the same year; also the corresponding totals for the mid-census year 1926.

Proportion of Practitioners to Population

Year	Registered Practitioners	Population, British Isles
1881	23,275	35,241,482
1891	29,555	38,104,975
1901	36,912	41,976,827
1911	40,913	45,370,530
1921	45,408	47,146,506
1926	52,614	48,190,000

These figures show a steady increase in the ratio of doctors to population, which was accelerated during the years immediately following the war. The number of registered practitioners at the end of 1921 was nearly double the number at the end of 1881, but the population of Great Britain and Ireland within that period of forty years only increased by about 34 per cent. There is now considerably more than one name in the *Medical Register* to every thousand of population. In the United States of America it is estimated that there is one medical practitioner to every 753 people. Next to the United States the British Isles appear to have the highest proportion of practitioners to population. Austria has approximately one doctor to every 900 inhabitants; Switzerland 1 to 1,135; Denmark 1 to 1,200; Germany 1 to 1,320; France 1 to 1,470; Hungary 1 to 1,480; and Czechoslovakia 1 to 1,970.—*Brit. M. J.*

The Number of Medical Students in Great Britain

At the close of the last century the annual entry of medical students in Great Britain and Ireland had been on the average about 1,800, and then for the next thirteen years it stood at about 1,400. During the war period, although many students left to serve with the forces, the entries grew steadily larger, so that in 1918 they were 2,253, and in the following year, when demobilization was in active progress, they were 3,420. In the next five years the numbers rapidly fell, but from 1923 to 1928 they remained at a fairly steady level rather below the immediate pre-war average. In 1924 the entries were 1,043; in 1925, 1,070; in 1926, 1,260; in 1927, 1,214; and in 1928, 1,362. Last year they rose again to 1,502.

Excessive entries during the post-war inflation period, if they had gone on long enough, must have led to over-stocking of the profession. In the past decade the numbers of new practitioners registering each year have greatly exceeded the usual pre-war figure of eleven hundred or so. The large additions to the profession in recent years brought the total number of names in the *Medical Register* up to 54,870 at the end of 1929. This is upwards of ten thousand more than the figure for 1919, fourteen thousand more than that for 1909, and nineteen thousand more than that for 1899. The population of the British Isles has not increased at anything like that rate during the same decennial periods, and the ratio of doctors to inhabitants is therefore much higher now than ever before. It should be borne in mind, however, that the scope of medical practice has enlarged considerably in the meanwhile, and many fresh openings for professional work have followed advances in diagnostic, curative, and preventive methods, and the rapid development of administrative medicine. On the

XUM

whole, it appears that the medical profession of this country is now large enough, but not yet overstocked.—*Brit. M. J.*

Vital Statistics for 1929

The Registrar-General's Statistical Review for the year 1929, Part I. of which has just appeared, confirms the provisional figures for the general birth-rate, death-rate, and infantile mortality issued earlier in the year. The birth-rate of 16.3 per 1,000 persons living at all ages was the lowest recorded since the establishment of civil registration in this country, the lowest rates previously being 16.6 for 1927 and 16.7 for 1928. The death-rate of 13.4 per 1,000, against 11.7 for the previous year, was the highest since 1919, the increase being due almost entirely to the high mortality from respiratory and circulatory disease and to the epidemic of influenza during the severe cold of February and March. The infantile mortality-rate of 74 per 1,000 live births was 9 per 1,000 above that of the previous year, the excess again due to the high mortality of the first quarter. With the exception of the pandemic of 1918-19 the epidemic of influenza was the most severe experienced in this country since the disease reappeared in 1890-91, the mortality being equal to 734 per million living against 196 in 1928. The mortality from respiratory diseases rose from 1,507 in 1928 to 2,104 per million, but the latter figure had been exceeded in 1920, 1922, and 1924. The mortality from circulatory diseases reached the record figure of 3,030 per million, due largely to the deaths of elderly persons during the cold weather of the first quarter of the year. The death-rate from cancer was 1,437 per million living against 1,425 for the previous year, thus continuing the steady though slight increase over all recent years and being the highest crude rate recorded. The increase affected both sexes but was rather greater for females than for males. The mortality of women from puerperal sepsis and accidents of pregnancy and childbirth was 4.33 per 1,000 live births, compared with 4.42 in the previous year. The improvement was not in respect of puerperal sepsis, which actually increased from 1.79 to 1.80, but in "other accidents of pregnancy and childbirth" which improved from 2.63 to 2.53. Although lower than that in 1928 the combined rate is still above the experience of the seven years 1921-27.—*The Lancet.*

Radcliffe Infirmary, Oxford

The Radcliffe Infirmary, Oxford, has received an additional gift of £10,000 from Sir William Morris, the motor-car manufacturer, to complete the purchase price of the site of the Radcliffe Observatory, towards which he had already contributed £90,000. The Observatory site will be devoted to the erection of additional hospital buildings, for which there is a pressing need.

Sir William Morris's gifts to the Radcliffe Infirmary, of which he is president, now amount to £150,000.

Diplomas in Obstetrics

The Society of Apothecaries of London has now instituted a Mastery of Midwifery, and issues a diploma under this title denoting the possession of specialized knowledge of ante-natal care, midwifery, and child welfare. The diploma is, however, not registrable under the Medical Act.

The Conjoint Examining Board in England has issued this year regulations for its new Diploma in Gynæcology and Obstetrics (D.G.O., R.C.P. & S.Eng.). Those eligible for admission to examination must have held a degree in medicine and surgery recognized by the Board, for not less than three years. The subjects of the examination are gynæcology and obstetrics (including pathology, histology, and bacteriology in relation to these subjects), and ante-natal, post-natal, and infant welfare work. The examination is written, oral, and clinical, but only those candidates are admitted to the clinical who satisfy the examiners in the written and oral. A form is issued on which particulars have to be given and certified as to resident appointments in the gynæcological and obstetrical department of a recognized general hospital, in a gynæcological hospital, or a maternity hospital, or as to registrarship or clinical assistantship held in such institutions, together with particulars as to regular attendance, with responsible care of patients, at recognized ante-natal, post-natal, and infant welfare clinics during twelve months. It is added that these conditions of study may be modified in the case of a candidate who has carried out original investigations or written a thesis on some subject in gynæcology or obstetrics, or whose studies have extended over a prolonged time without fulfilling the exact conditions set out, but exemption will not be granted from any part of the examination. The fee for admission to examination or re-examination is ten guineas. Copies of the regulations for this diploma may be obtained from the Secretary, Examination Hall, Queen Square, W.C.1.

The British College of Obstetricians and Gynæcologists, founded last year, has power under its memorandum of association, either alone or in co-operation with authorized teaching and examining bodies, to grant to registered medical practitioners diplomas or other equivalent recognition of special knowledge of obstetrics and gynæcology. Diplomas granted independently by the College, however, will not of themselves confer any legal qualification to practise, and will embody a statement to the effect that they have been issued by the authority of the British College of Obstetricians and Gynæcologists alone.—*Brit. M. J.*

Fellowship of Medicine and Post-Graduate Medical Association

The Fellowship of Medicine has arranged regular courses in general medicine and surgery, including special departments, each lasting two weeks. The fee for each course is 3 to 5 guineas. Courses in diseases of the chest, children, ante-natal, heart, nervous system, throat, nose, and ear; dermatology; gynæcology; proctology; psychological medicine; tropical medicine; urology; and venereal diseases are given from time to time at the special hospitals in association with the Fellowship of Medicine. Evening courses for the M.R.C.P. and F.R.C.S. (Final) are arranged also. The Fellowship "General Course" Program contains a diary of the arrangements available for post-graduates in various general and special hospitals in London. The office of the Fellowship is, by kind permission of the Royal Society of Medicine, at No. 1, Wimpole Street, W.1 (telephone, Mayfair 2236). The secretary is in attendance daily from 10 a.m. to 5 p.m., excepting Saturday. The annual subscription for membership of the Fellowship of Medicine and Post-Graduate Medical Association has been fixed at a minimum of 10s., which includes the subscription to the *Post-Graduate Medical Journal.*

The Fellowship arranges, during the autumn and winter sessions, a series of lectures. Special clinical demonstrations in medicine and in surgery are arranged also weekly from October onwards. Syllabuses will be sent regularly on application.

ALBERTA

The travelling tonsil clinic of the Provincial Department of Health discontinued work in the southern portion of the province owing to the presence of a number of cases of acute poliomyelitis during the latter part of August. Operative work was carried on in the Peace River District during the month of September.

Members of the Alberta Medical Association will be pleased to learn that during the early part of November lectures will be given under the extra-mural post-graduate scheme by Dr. L. H. McKim, of Montreal, on "Infections of the hand" and "Fractures involving the ankle-joint", and by Dr. C. C. Birchard, of Montreal, on "Arteriosclerotic heart disease."

Recently Mr. W. G. Hunt, Associate Secretary of the Alberta Medical Association, made a tour of the Peace River District, where he found abundant crops but prices so low that farm operations brought a loss rather than a profit. Continued rains spoiled much of the grain. The result of this is that as medical accounts are the last to be paid there will be hard times for the physicians in this area. The acuteness of the situation may be better understood when it is noted that in all new countries, settlers are scattered and doctors make treble the mileage made in the older settled places. In addition to this automobiles, gasoline and oil and general services to cars are more costly than in the other portions of the province. We are pleased to report that the medical men are remaining with their work and are rendering most efficient service in this the hinterland of Alberta.

Recently letters have been received from an eastern firm indicating where certain drugs may be purchased for the purpose of birth control. The criminal code of Canada states that "Everyone is guilty of an indictable offence and liable to two years' imprisonment who knowingly, without lawful justification or excuse, offers to sell, advertises, publishes an advertisement of or has for sale or disposal any means or instruction or any medicine, drug or article intended or represented as a means of preventing conception or of causing abortion or miscarriage." While the Customs Act and the Post Office Act can prevent the importation of the drugs and the circulation of literature one wonders why the Departments are inactive.

In a recent address delivered at Calgary, Dr. W. R. Bow, Deputy Minister of Health for Alberta, submitted facts and figures showing that Alberta had a smaller death rate than most countries, but at the same time claimed that it was too high. The chief reason for a death rate being high was that people did not take the proper care of themselves until it was too late. Everyone should consult a doctor once a year for a thorough examination, and this, by getting at the root of the trouble immediately, would lower the death rate still further.

The new wing of the Innisfail Municipal Hospital was opened recently by the Hon. George Hoadley, Minister of Health for the province, who in an address dealt with the hospital needs of the province, stating that he had recently visited between thirty and forty hospitals throughout Alberta and also in other and older provinces, returning more than satisfied with what had been done in Alberta, and feeling appreciative toward the people who had made it possible to achieve such results. He appealed for the support of the people, as the satisfactory results depended to a great extent on the backing it received. He dealt in passing on the needs of the children, advocating frequent examinations of the 160,000 school children in the province, as its future depended on their welfare. He enumerated the problems before them, problems that must of necessity be met by the population at large, as it would be impossible to deal with them by individual effort. People required hospital facilities not dreamed of in former days, and to secure efficiency in this respect would require united effort on the part of every one in the province.

A second meeting was held at High River, called for the purpose of formulating plans for the formation of a model health unit. There was a distinctly favourable attitude on the part of the majority of representatives who were present from the municipal and town councils of nearby municipalities. The next step in procedure will come from the Provincial Department of Health, who will issue standard forms to each municipal body in the proposed unit, calling for acceptance or rejection. If the decision is favourable, the qualified physician chosen as medical officer of health will be given three months of specialized training and will then take charge. This will place the unit on a working basis about April 1, 1931. The medical health officer's work will be in education along preventive lines, and the annual inspection of each child of school age in the unit and each child of pre-school age. The detection of communicable diseases, immunization, and prevention of epidemics will also be part of his duty. Office hours may be arranged to permit the free examination of any adult so desiring. His duties do not, however, extend to treatment, and in no way does he infringe on the work of the family physician.

According to Dr. Gordon Bates, General Secretary of the Canadian Council of Social Hygiene, who visited Calgary in September last, investigations disclose that the cost of illness in Canada has advanced to $31,000,000 each year. It is the main object of the Social Hygiene Council to attack this problem of health on broad lines, stressing the social significance of health and life conservation. Its efforts are purely preventive and educational, and the main stress is laid on the present waste of money and life which results from unnecessary illness.

Recently the Council has been coöperating in the movement for additional county health units which have already proved of great value in rural districts. Alberta health authorities are showing interest in the matter and Dr. Bates expressed the hope that the coming session of parliament would enable the system to be extended to all parts of Canada. The Social Hygiene Council is also coöperating in efforts to develop medical inspection of schools, sanitary inspection, clinics for child welfare, pre-natal care and the care of tuberculous cases. It is interested also in the promotion of the periodical health examinations plan which involves consulting the physician at regular intervals when the consultant is apparently well.

The increase in the charge to the mill rate from the Calgary Municipal Hospitals for the year so far is still over last year. For the first eight months of 1930 it was $82,464.03, while up to the end of August last year it was $60,069, an increase of $22,395. So far this year total expenditure has been $206, 337.52 as compared with $212,180 in the same period last year. The estimated amount for 1930, as set forth in the budget for the twelve months, was $311,388.32.

G. E. LEARMONTH

XUM

BRITISH COLUMBIA

A joint meeting of the British Columbia Hospital Association with the Western and Northwestern Hospital Associations was held in Vancouver from August 19th to 22nd. The American delegates from the Associations to the south of the line contributed to a record attendance. Mr. Foley, Editor of the *Modern Hospital*, and Dr. Helen G. Stewart, of the Carnegie Library Fund, were among the speakers. Steps to insure the keeping of more complete hospital records were discussed, as well as, the effect of the recent changes in the tariff on the cost of hospital supplies.

The Pacific Coast Oto-ophthalmological Society met in Victoria September 3rd, 4th and 5th, Dr. A. L. Jones, of Boisé, Idaho, presiding at the meeting, which included not only the reading of papers but a number of round-table discussions.

At the opening meeting of the Vancouver Medical Association on September 30th, Dr. R. D. Rudolph and Dr. Frank Scott, of Toronto, who have been touring British Columbia for the Canadian Medical Association, were the speakers of the evening. Dr. Rudolph spoke on "High and low blood pressure", and Dr. Scott on "Intestinal obstruction".

Dr. F. T. Underhill has resigned as Medical Officer of Health of the City of Vancouver. Dr. Underhill's association with the city began in 1897, when he acted as bacteriologist. He has held the position of health officer continuously since 1904. C. H. BASTIN

MANITOBA

A regular meeting of the Winnipeg Medical Society was held on September 26th with Dr. J. A. Gunn, President, in the chair. The evening was devoted to a discussion of thyroid problems. Dr. G. S. Fahrni spoke on "Pregnancy complicating hyperthyroidism and following thyroidectomy" based on a series of cases in his own practice, and Professor Wm. Boyd spoke in more general terms of "Thyroid dysfunction."

On September 29th Dr. J. D. Adamson, Honorary President of the Manitoba Medical Students' Association, delivered the inaugural address to the students of the Faculty of Medicine.

Dr. Boyd and Dr. Fahrni addressed the Border Medical Society on September 25th. ROSS MITCHELL

NEW BRUNSWICK

The Finance Committee of the Municipal Council of Saint John has authorized the expenditure of $65,000.00 for equipment for the new Saint John General Hospital. At the same meeting the Committee authorized the expenditure of $35,000.00 for renovations and improvements at the Saint John Tuberculosis Hospital at East Saint John. The expenditure at the Tuberculosis Hospital provides for new balconies, a passageway from the main building to the Nurses' Home and for changes in the general offices.

The extra-mural lectures in New Brunswick, for September, covered the towns of Woodstock, Fredericton, Saint Stephen, Saint John and Moncton. The speakers were: Dr. J. F. Burgess, of the skin clinic of the Montreal General Hospital, and Dr. Stewart Henry, of the Royal Victoria Maternity Hospital. The speakers were provided by McGill University.

Dr. J. F. Burgess spoke on "Common skin disorders and their treatment." Dr. Stewart Henry read a paper on the "Hormonal control of the female sexual functions."

Dr. Henry's address contained the newer concepts in glandular function in the female, and although rather technical was received with definite interest. Dr. Burgess' lantern slide demonstration of the commoner skin diseases was brilliantly developed, and as skin disease is always a difficult subject in practice, this paper was of more than usual interest.

It is reported that the meeting at Saint Stephen was well attended, and the interest shown was much appreciated by the speakers. The meeting in Saint John was one of the largest that the extra-mural course has brought together since their inception.

It is pleasing to the reporter that the extra-mural services of the Canadian Medical Association seem to be meeting with an even greater response than last year. This is considered remarkable, because even from the beginning the response to these meetings has been more than satisfactory.

His friends are glad to learn that Dr. L. L. Kirkpatrick has again been able to resume his practice at St. Martins. Dr. Kirkpatrick has successfully recovered from a long and tedious illness.

The annual fair, in aid of the Soldiers' Memorial Hospital at Campbellton, has been again an outstanding success. The reports indicate that this North Shore institution has further entrenched itself in the hearts of the people in the large area which it serves.

Dr. L. G. Pinault delivered the medical address to the meeting of the Catholic Women's League at Campbellton towards the end of September.

The members of the New Brunswick delegation to the Canadian Medical Association annual meeting in Winnipeg report that the hospitality of the Manitoba Society was of an outstanding sort. Their stay in Winnipeg was very happy and their reports of the meeting, in general, indicated that the combined meeting of the Canadian and British Societies was even better than was expected.

At the meeting of the New Brunswick Nurses' Association, at Bathurst, held on September 8th, Dr. C. J. Veniot read an interesting paper on "The functions of the endocrine glands."

Dr. M. A. Oulton, of Shediac, has been appointed

full time Medical Officer to the New Brunswick Workmen's Compensation Board. Dr. Oulton has resigned from the Legislature to accept this appointment and will in future make his home in Saint John.

Dr. F. A. Richard, of Moncton, attended a post-graduate course in x-ray work at the Johns Hopkins Hospital, in September. He was accompanied by Dr. A. A. Sormany of Edmundston. A. STANLEY KIRKLAND

NOVA SCOTIA

In the course of an address to the Sydney Rotary Club, in September, Dr. John K. MacLeod, City Health Officer, stated that Sydney had at that time a clean bill of health in respect of communicable diseases.

Among members of the British Medical Association who visited Halifax *en route* home from the Winnipeg meeting were Drs. Ballantyne and Paul, of Glasgow, and Dr. Price, of London.

An exceptionally dry summer has caused a serious water shortage in many rural places in Nova Scotia, and many people have been compelled to get their supply from sources liable to pollution. Several cases of typhoid fever have been reported from different parts of the province. Two cases in Halifax are attributed to the drinking of water of wayside pools when motoring through the country.

Three cases of infantile paralysis were reported from Halifax during September. One of the city newspapers gave much publicity to the matter, but seemingly without creating general alarm. Ten cases have been reported in recent months from various parts of the province. Immune serum is being collected by the Provincial Department of Health for distribution where needed.

Medical officers who served overseas during the war will be interested to learn that Major-General Carleton Jones has returned to Alassio, Italy, and again taken up residence there.

Drs. Hart and Tisdall, of Toronto, were in Nova Scotia in September as lecturers under the Canadian Medical Association plan for post-graduate instruction, and addressed some of the branches of the Medical Society of Nova Scotia. Incidentally they entertained some of the salmon of the Margaree River.

Dr. George H. Cox, of New Glasgow, well known for his fondness for antiques, recently addressed the Halifax Rotary Club on the "Search for fossils", illustrating his talk with specimens which he had found in various places—more particularly Florida. His address was intensely interesting. Despite the fact that he makes frequent visits to Halifax the city profession remains intact!

Late in September, Dr. Fulton, of Truro, removed a piece of glass from a lady's face which had been imbedded there since the date of the great explosion at Halifax in December, 1917.

When P. L. Herman, who spent a fortnight or so at Annapolis Royal when a travelling show was operating in that town, took out a license to sell candy and peanuts he thought he was privileged to sell other things too. And when he undertook to examine people for visual defects and to sell spectacles, objections were raised and he was haled to court. His claim that he had been president of the Nova Scotia Board of Optometrists seemingly did not convince the magistrate that he was entitled to practice optometry on so limited a license, and it was decided that he must either pay a fine of twenty-five dollars or go to gaol for thirty days.

W. H. HATTIE

ONTARIO

A very interesting and important event took place in Trinity Church, Bond Head, on Tuesday, September 30th, when a magnificent stained-glass window and brass tablet to the memory of the late Sir William Osler, Baronet, the world-famous physician, who was born in the old rectory that stood one mile west of the church and who was baptized in Trinity Church, Bond Head, were unveiled and dedicated. The clergy present were the Lord Bishop of Toronto, the Rev. A. P. Kennedy of Beeton and Rural Dean of South Simcoe, the Rev. Blevin Atkinson of Cookstown and the Rev. C. R. P. Hearn, the rector of the parish.

Dr. T. A. Cummings, of Bond Head, in a well chosen speech made the presentation of the memorial to the church on behalf of Simcoe County Medical Association, the donors. The window and tablet were unveiled by Miss Mary Gibbons, granddaughter of Sir Edmund Boyd Osler and grandniece of Sir William. The Lord Bishop dedicated the memorial and gave a most appropriate and inspiring address on the life of the one commemorated. A large congregation was present, including many distinguished members of the medical profession. The subject of the window is the healing of the sick after Hoffman's picture of the same, and it is the work of the N. T. Lyon Glass Co. of Toronto. The window and tablet were placed in the north transept of the church where is the Communion Plate (now nearly one hundred years old) which was used when the Rev. Featherstone Lake Osler (who founded the parish and who was the father of Sir William Osler) was conducting the services. Thus this transept has been arranged as a side chapel in memory of the Osler family.

In addition to this main memorial to Sir William Osler, the Bishop dedicated several other gifts to the church—a sterling silver bread box presented by the Rev. H. B. Gwyn, M.A., of Tiverton, R. I., in memory of his grandfather, the Rev. Featherstone Lake Osler; a brass altar cross presented by Mrs. Fred. Amey in memory of her mother, the late Mrs. Coffey; a pair of brass altar vases for the Osler Chapel in memory of the Rev. F. L. Osler; and a cossal curtain presented by Mr. Geo. Carter of Toronto in memory of his father. After the dedication ceremony the Simcoe County Medical Association held a convention in the Orange Hall, Bond Head. Additional details of this most interesting event can be found elsewhere in this issue of the *Journal*.

Dr. G. S. Cronk, Medical Officer of Health, reported that on October 17th there were 17 cases of typhoid fever in Belleville, Ont., and owing to the seriousness of the situation, two special wards had been set aside at the hospital to deal with it. The cases had developed during the previous three weeks.

XUM

A local dairy was promptly closed when it was found that most of those stricken were among its customers. Officers made an investigation and reached the conclusion that "a carrier" had been employed by the dairy, and he was discharged.

It was at first thought the typhoid had its source in a city spring from which many of the residents obtained their supply of water, but an analysis found the water pure. Health authorities are taking every precaution to prevent the spread of the disease which is confined chiefly to children. They stated that the outbreak is under control. Five of the cases are from outside the city.

The appointment of Dr. T. D. Cumberland, superintendent of the Ontario Hospital for Epileptics at Woodstock, as superintendent of the Ontario Mental Hospital at Kingston is announced by Hon. Dr. John M. Robb, Minister of Health. Dr. Cumberland succeeds Dr. Edward Ryan, who retired from the Government service at the end of October.

QUEBEC

The eleventh Congress of L'Association des Médecins de Langue Française de l'Amérique du Nord was held in Montreal on September 16th and 19th. The international complexion of the congress was shown in the attendance of delegates from Paris, London, Havana, Mexico and the United States. The registration, which was between six and seven hundred, constituted the largest number recorded in the annals of the Association.

One of the features of the convention was a visit to the St. Hubert Airdrome where demonstrations were held of the medical side of aviation. Clinical meetings at the Hôtel-Dieu, the Hôpital St. Jean de Dieu and other local hospitals were arranged and were well attended. Dr. E. Archibald gave a demonstration of the methods and indications for thoracoplasty in tuberculosis, stressing the need for careful selection of the patients to be operated on. The program included an exhibition of medical appliances, surgical instruments and pharmaceutical products.

Amongst the interesting incidents of the meeting was the presentation of a plaque by Dr. Pierre Z. Rhéaume, President of the Association, to Dr. D. Brochu, one of the oldest medical men in Quebec city and responsible for the organization of the Association. Dr. Brochu was for many years Dean of the Faculty of Medicine of Laval University and many of the senior medical men at the meeting had been his pupils.

A recent report issued by Dr. S. Boucher, Director of Public Health, Montreal, covering typhoid fever, infantile paralysis and diphtheria, is as follows:

Infantile paralysis: cases reported since January this year totalled 7, as against 32 for the same period last year. Diphtheria cases from January 1st to the end of September this year totalled 656, with 52 deaths, as compared with 847 cases and 83 deaths in 1929.

Typhoid fever accounted for 72 cases and 13 deaths so far this year as against 78 cases and 19 deaths for 1929. The month of September had 13 cases and 5 deaths while last year the same month had 18 cases and 2 deaths.

For the last week in September this year there were 3 cases and 1 death, while in 1929 the same week showed 11 cases and 1 death.

Infant mortality continues to diminish in Montreal according to a bulletin for July and August issued by Dr. S. Boucher, Director of Public Health. Since the beginning of the year there were 1,771 deaths of infants under one year as compared with 1,808 in the same period of 1929. The rate for 1930 is 130.22 per 1,000 births, while for 1929 it was 132.86,

The list of contagious diseases, on the other hand, shows a considerable increase. For the eight months of 1930 12,035 cases of contagious maladies have been reported as against 9,575 for the same time in 1929. The list is as follows for each eight-month period 1930 and 1929 respectively: Diphtheria, 573—781; scarlet fever, 1,619—2,189; typhoid, 56—60; measles, 1,767—1,793; Germain measles, 643—250; chicken-pox, 1,793—826; whooping cough, 1,576—744; tuberculosis, 1,467—1,546; mumps, 2,217—858; cerebro-spinal meningitis, 35—33; small-pox, 5—40; erysipelas, 154—184; ophthalmia, 6—6; infantile paralysis, 7—206; influenza 107—245.

Deaths from various causes in July and August were as follows: typhoid, 1; tuberculosis, lungs, 136; pneumonia, 22; cancer, 119; Bright's disease, 107; accidents, 99; other causes, 1,040.

In the presence of a large gathering, which included many of the founders of the original sanatorium, the new Mount Sinai Sanatorium at Ste. Agathe was opened and dedicated recently. The building which is situated on a knoll is four storeys high and is fitted with the latest means for combating tuberculosis.

Joseph Cohen, K.C., M.P.P., representing Premier Taschereau, suggested that help might be forthcoming from the Provincial Government towards the reduction of the debt of $100,000 which is still on the building, saying that it would materially help toward the endowment of this undenominational institution. He thought that, despite the fact that they had always relied successfully on voluntary subscriptions for their funds in the past, this was an occasion when the work being done was so necessary in the community that it offered an opportunity for the Government to provide funds.

The community of Ste. Agathe was represented by Mayor L. E. Parent, M.P., who said that the building was a credit to the founders and a decided asset to the district, being the most up-to-date of its kind in the province. Rev. Mr. Mitchell, representing the Christian community, also tendered congratulations.

Approved Hospitals in Quebec

At the Annual Clinical Congress of the American College of Surgeons, held at Philadelphia in October, Dr. Franklin H. Martin, Director General of the organization, announced a list of 2,063 hospitals in the United States and Canada which have been inspected and approved by the college as being properly equipped and conducted to care for the sick. Montreal hospitals show a high grade of efficiency, according to the report.

From a situation in which only 89 hospitals of these two nations were able to attain the standards established by the American College of Surgeons to the present status in which nearly three-fourths of the institutions now meet with approval is the impressive record of hospital advancement during the last thirteen years.

The hospitals in the Province of Quebec fully approved by the American College of Surgeons are as follows:—

Name of hospital and location	Capacity
Montreal—	
Alexandra Hospital	155
Children's Memorial Hospital	115
Homeopathic Hospital of Montreal	115
Hôpital de la Misericorde and Catholic Maternity	600
Hôpital Sainte Jeanne D'Arc	211
Hôpital Sainte Justine Pour Les Enfants	340
Hôtel-Dieu de Saint Joseph	300
L'Hopital Notre Dame	306
Montreal Foundling and Baby Hospital	80
Montreal General Hospital, Central Division	400
Montreal General Hospital, Western Division	85
Royal Victoria—Montreal Maternity Hospital	790
Shriners' Hospital for Crippled Children	60
Woman's General Hospital	225
Quebec—	
Hôpital du Saint Sacrament	280
Hôtel-Dieu du Precieux Sang	260
Jeffery Hale Hospital	140
St. Anne de Bellevue—	
St. Anne de Bellevue Hospital	650
Ste. Foy—	
Hôpital Laval	270
Sherbrooke—	
Hôpital General, St. Vincent de Paul	250
Sherbrooke Hospital	90

A half-million dollar addition to Laval University, Quebec, is planned for next spring. The building, which is to be for the faculty of law and medicine, will include the cancer institute and the biological laboratories. A number of buildings are to be demolished at the corner of Hebert and St. Famille Streets to make way for it.

A second wing, duplicating the first, is to be added to the Enfant Jesus Hospital in Quebec, at an estimated cost of $165,000. When everything is completed, the hospital will have cost $900,000.

On Wednesday evening, October 8th, a memorable dinner was given at the Windsor Hotel in honour of Dr. A. K. Haywood, Superintendent of the Montreal General Hospital. Dr. Haywood was on the eve of his departure to take up new duties in the Vancouver General Hospital, and this dinner was only one of a large number of similar events in his honour. These in themselves bore testimony to Dr. Haywood's popularity, for they were given by many different groups and professions in the city. This dinner, however, was given by the members of the medical staff of the Montreal General Hospital alone, whose regret at his departure was fully voiced in the various speeches. Prominent amongst these was that of Dr. A. H. Gordon who allowed full play to his inimitably keen and refreshing sense of humour, salted with just enough of the right amount of the serious. He was ably aided and abetted by Dr. F. H. Mackay, who reviewed Dr. Haywood's career in a style that was sufficiently illuminating, without being overloaded with unnecessary details of absolute accuracy. These speakers were thoroughly well supported and to some extent perhaps guided by Dr. C. H. Peters, the chairman of the dinner in the absence—unavoidable and greatly regretted by all—of Dr. H. A. Lafleur. A presentation of a silver platter was made, and Dr. Haywood performed the difficult task of acknowledgment most successfully. The very best wishes of his confrères and of a large section of Montreal citizens accompany him to the west.

In the eight months from January to August, 1930, there were 5,474 automobile accidents in the Province of Quebec, causing a total of 130 deaths, according to statistics issued by J. A. Begin, Comptroller of Provincial Revenue.

In the four winter months, January to April, 1,937 of the accidents occurred with the open season, the totals jumped. In May there were 811 accidents, in June, 1,032, in July, 1,022, and in August, 672.

The greatest proportion of the accidents came through vehicles meeting, 1,124 coming under that head. Of the 5,474 smashes, 4,473 were due to the carelessness of one driver; 134 cases were due to drunkenness. Intersections saw most accidents, 3,017 being registered; 111 were on railway crossings. There were 53 collisions with trains, and 3,400 between automobiles.

One hundred and thirty persons were killed, and 1,669 injured.

A new and, so far as Montreal is concerned, a novel form of collection drive has been launched within the past few days. The objective is a sum of money sufficiently large to build a convalescent wing at the Shriners' Crippled Children's Hospital. The campaign is being put on by the Shriners of Karnak Temple, and they are collecting not money directly, but tinfoil.

The collection of tinfoil has been a money-raising expedient of other bodies of Shriners. The Minneapolis Temple raised $96,000 for a children's hospital in three years by that method, and the members of Karnak Temple feel that with the support which they have every reason to expect from the general public, they will accomplish something quite as creditable.

All forms of tinfoil, taken from cigarette and tobacco packages, or tea packages, toothpaste or shaving cream tubes, even ordinary scrap metal, will be gratefully received by the Shriners' "tinfoil committee." Inquiries regarding the tinfoil campaign may be addressed to Edward W. Francis, 1492 St. Catherine Street West, Montreal.

Dr. Paul Garneau has been appointed Librarian of the Medical Faculty Library, Laval University, Quebec.

SASKATCHEWAN

When the post-graduate team consisting of Dr. Sutherland and Dr. Cone, of Montreal, which toured Saskatchewan in September, visited Regina a clinic of interesting cases was arranged at the Regina General Hospital. Those discussed by Dr. Cone were:

Case 1.—Presented by Dr. A. C. McMillan. A man aged 30, was injured while threshing. No one saw the accident; he was found unconscious a week ago. Blood was present in the spinal fluid, which was under a pressure of 390 mm. of water; pulse 60; blood pressure 140/90. Examination showed hæmorrhage in the conjunctiva, which Dr. Cone stated was usually evidence of a basal fracture. Right exophthalmos was present; there was dissociation of the eyes; the corneal reflex was present in the left eye. The left side was moving constantly; the tone of the right arm was much less than that of the left. Biceps, triceps and radial reflexes all were weak; the right cremasteric was less than the left. Babinski's sign was present on the right side, as was ankle clonus, but the right leg on stimulation moved, showing that a paresis was present rather than a paralysis.

XUM

In arriving at a diagnosis Dr. Cone said that his practice in admitting such cases was to take the blood pressure every half hour after admission and the pulse every fifteen minutes. The pulse rate falls first: then the systolic and diastolic pressures separate; and in the terminal state the systolic blood pressure increases. In this case, if the motor cortex on the left were injured there should be increased reflexes in the right side but this was not so. It is important to remember that in accident cases there is often a double injury. The present case may show both a peripheral and central lesion. Dr. Cone recommended a left subtemporal decompression, as there might be present a subdural hæmatoma to be removed. Until operation the patient should be in the upright posture, and the spinal fluid removed in small amounts three times a day. The patient was operated upon three days later. The fluid was under great pressure and localized in a cystlike manner. There was some maceration of the brain. The patient is recovering.

Case 2.—Presented by Dr. Urbain Gareau. A girl, aged 12 years, who had suffered from fits for five years. Her birth was normal. She sat at six months and walked at one year. She attended school one year and did well. She could do housework and milk a cow. The convulsions began five years ago. The girl was seen by Dr. Gareau, two and one-half years ago. On examination the central nervous system was normal. The patient was given phenobarbital gr. i, daily, and told to report at intervals. She had not done so until now. At present she is having one attack a week, and the attacks are now lasting longer than at first.

In discussing the case Dr. Cone said to watch the attack in every phase to see if each attack followed the same pattern. When this was the case there was often an old lesion of the brain which brings on the attack by acting as an irritant. If in this case the pattern of the attacks was always the same he suggested that ventriculography be done. In order to induce an attack for the purposes of study one should ask the patient to breathe deeply for ten minutes; the resulting alkalosis will usually bring on an attack.

Case 3.—Presented by Dr. Morley Currie. A boy, aged 14, woke up giddy, one morning, but later on walked down town. He then felt weakness in the knees and legs, with numbness, and a pins and needles feeling in both hands and feet. On admission to hospital he became unable to use hands or to sit up; he had some difficulty in breathing; and there was some rigidity of the neck. On examination, it was found that the deep reflexes were absent in the legs; the reflexes were absent in the abdomen; and there was weakness in the intercostal muscles.

Dr. Cone suggested that the rigidity of the neck might be due to the weakness of the erector spinæ mass. The spinal fluid showed a cell count of 9 on admission, which dropped to 5 in three weeks. Throat culture was negative for diphtheria. Diagnosis: anterior poliomyelitis. Dr. Cone pointed out the danger of scoliosis after the patient begins to sit up.

Case 4.—Presented by Dr. Lillian A. Chase. A woman, aged 33, who had a history of stomach trouble for fifteen years. This had been worse for the last two months when she wanted to eat. She was afraid to eat, however, owing to distress afterwards. She had had a hæmorrhage from the stomach five weeks before. The patient was 6 feet tall, weighing 115 pounds, which is approximately 50 pounds under weight. The pulse was fast (100 to 110) but the temperature was normal. Examination was essentially negative, except that the spleen could be palpated. Hæmoglobin, 30 per cent, red blood cells, 2,140,000; white blood cells, 4,200. The urine was normal. The blood smear was that of a secondary anæmia. The original diagnosis was gastric ulcer. X-ray pictures had been made of the gastrointestinal tract which showed no sign of ulcer. Examination of the gastric contents showed no blood; there was no blood in the stools. There was no free HCl in the stomach.

Dr. Sutherland suggested x-ray examination of the gall bladder and the giving of the histamine test to determine whether the absence of HCl in the stomach was organic or functional, but in his opinion the case was not that of ulcer, as the history extended too far back. He thought the patient belonged to that large group of undernourished adults who complain of stomach trouble.

Dr. Harvie inquired as to why the gastric hæmorrhage had occurred. Dr. Sutherland said that often in these cases the veins were markedly dilated. He recalled seeing one case at operation where the epiploic veins were the size of the little finger. The patient had already been put on hydrochloric acid but he advised a larger dose, of one drachm in milk, before meals three times daily.

Case 5.—Presented by Dr. D. C. Hart. A farmer, aged 51, who had complained of gastric symptoms for sixteen years, but he had been worse the last three months, having lost 40 pounds. At present his chief complaint was pain. When pain was present he felt like vomiting. In the past he was often free from symptoms for weeks and sometimes for years. A gastric ulcer was once diagnosed. His stomach contents showed no free HCl.; his stools were positive for blood. Hæmoglobin, 40 per cent. The x-ray picture showed a filling defect over the antrum near the pylorus which looked like a malignant condition; the cap was poorly filled.

Dr. Sutherland said that the observation of a stomach under the fluoroscope was just as important as the finished plates, while he concurred in the diagnosis of carcinoma he said the man should have the advantage of a laparotomy after careful preparation with intravenous glucose.

After a luncheon at the Nurses' Home Dr. Sutherland gave an address on "The undernourished adult." He stated that this nervous, underweight type, with no demonstrable lesion, comprised 30 per cent of the patients who come in complaining of stomach trouble. He stressed the importance of a careful examination, saying that it is one of the fears of the doctor that some day he will pass up a case of gastric carcinoma in mistake for one of these. On the other hand, a thorough examination wins the patients' confidence for they have usually gone from one doctor to another to find relief. He advised putting them to bed on a diet of four ounces of milk every two hours for a few days. He said that it did not really matter what the routine was, but that the lack of food for a few days produced an appetite; then special attention should be paid to rest and to diversion.

After attending the Hamilton Tigers game in the afternoon the District Medical Society held their annual meeting following a dinner at the Parliament Building. Dr. Cone addressed the society on "The surgical treatment of epilepsy." He said that 10 per cent of all epileptics have a history of some brain injury, which may have occurred so long before that it had been forgotten. He showed lantern slides of his own cases, in which operation and removal of scar tissue had been followed by recovery from the epileptic attacks.

Representatives from St. Paul's Hospital, Saskatoon, from the Grey Nuns' Hospital, Regina and from the Regina General Hospital met the Workmen's Compensation Board in Regina to protest against the low rates paid by the Board for their hospital patients. It was pointed out by the hospital representatives that the rates were lower than in other provinces. One particular source of complaint is that the Board refuses to pay for the use of the dressing room and for dressings given to patients who do not require bed treatment. The Board maintains that all dressings should be done in doctors'

No Change!

In all the Confusion of increasing Viosterol strengths

OSTOGEN

(VIOSTEROL IN OIL, CONCENTRATED)

ALONE — STANDS THE TEST of recent clinical investigation

NO CHANGE IN THE POTENCY OF OSTOGEN

American manufacturers have recently increased the strength of their Viosterol in Oil, at the request of the Wisconsin Alumni Research Foundation, from 100 D to 250 D. *This change emphasizes the correctness of the potency of Ostogen which remains the same as when first introduced to the profession.*

NO CHANGE IN THE STANDARDIZATION METHODS OF OSTOGEN

A recent report[1] says *"the present method of standardizing Viosterol in Oil, on the basis of Cod Liver Oil units, is founded on the false premise that the action of Cod Liver Oil and Viosterol is the same in infants and in rats. A better method would be to compute the potency directly either as protective or curative rat units."* . . . . *"a certain number of drops of Viosterol represents so many hundred or thousand units."* From the start, Ostogen has been standardized in this fashion, one drop equal to 2,000 Vitamin D units (Pharmaceutical Society of Great Britain).

NO CHANGE IN THE DOSAGE OF OSTOGEN

The report referred to above also mentions *"The dosage of Viosterol should be increased from 2½ to 3 times. This can best be accomplished by increasing the strength of the solution."*

DOSAGE

Prophylactic - - - 2 drops daily
Curative - - - - 2-6 drops daily
From Standardized Dropper

1. Newer Aspects of the Therapeutics of Viosterol, A. F. Hess, M.D.; J. M. Lewis, M.D.; and Helen Rivkin, M.A., J.A.M.A., Vol. 94, No. 24, p. 1885, June 14, 1930.

Mail the coupon for an original 3.5 c.c. bottle and further literature

MADE IN CANADA BY

Charles E. Frosst & Co.
Manufacturing Pharmacists Since 1899
Montreal - Canada

Charles E. Frosst & Co. P.O. Box 808, MONTREAL
Please send me original 3.5 c.c. bottle of Ostogen with further literature.

C.M.A.J. 11-30

XUM

offices. But when a workman is injured his fellow workers rush him at once to the hospital; to turn these patients from the door and tell them to go to some office is manifestly impossible, and would rightly subject the hospital to unfavourable criticism. As is to be expected, the application of any form of state medicine causes much argument between the lay administrators and the professional workers.

Dr. A. R. McPherson, who has been spending the past four months doing post-graduate work in orthopædics with Drs. Galloway and MacKinnon in Winnipeg, has returned to the staff of the Prince Albert Sanatorium.

Dr. T. M. Leask, of Moose Jaw, paid an official visit to Prince Albert in his capacity of chief medical advisor to the Canadian Pacific Railway in Saskatchewan.

LILLIAN A. CHASE

UNITED STATES

Study of Hospital Practice

The New York Academy of Medicine, in its recent annual report, advocates an intensive study of hospital practice, including the qualification of methods of appointing the medical personnel and the methods of recording case history and pathological observations. Such a course is said to be necessary to guard against unnecessary operations, which are said to be performed in some of the unsupervised hospitals of the metropolitan district. Such a study of hospitals should include public and private hospitals as well as incorporated and unincorporated hospital nursing homes. The officials of the Academy predict that, unless some supervision is exercised over some hospital practice, state supervision of all hospitals will follow in the immediate future.—*J. Am. M. Ass.*, p. 1106, Oct. 11, 1930.

The New York Academy of Medicine, Fifth Avenue and 103rd Street, New York, U.S.A.

The Academy announces a fifth series of lectures on subjects of special interest to the practitioner to be held on Friday afternoons at 4.30 p.m. The profession generally is invited to attend. The list of subjects and lectures follows:—

1930

November 7.—"Epilepsy and the convulsive state." Foster Kennedy, Professor of Neurology, Cornell University Medical College.

November 14.—"Carcinoma of the colon." Frank H. Lahey, Surgeon-in-Chief to the Baptist Hospital, Surgeon to the New England Deaconess Hospital, and Director of Surgery at the Lahey Clinic, Boston.

November 21.—"The treatment of pelvic infections." George Gray Ward, Professor of Obstetrics and Gynecology, Cornell University Medical College, Chief Surgeon, Woman's Hospital.

December 5.—"The thyroid." Nellis B. Foster, Associate Professor of Medicine, Cornell University Medical College.

December 12.—"The therapeutics of ultra-violet light." Alfred F. Hess, New York.

December 19.—"Occupational and industrial diseases." Miss Frances Perkins, State Industrial Commissioner, Albany.

1931

January 9.—"Treatment of anæmia." George R. Minot, Professor of Medicine, Harvard University; Director of Thorndike Memorial Laboratory and Associated Medical Services, Boston City Hospital.

January 16.—"Diet in disease." Eugene F. Du Bois, Associate Professor of Medicine, Cornell University Medical College, Director Second Medical Division, Bellevue Hospital.

January 23.—"Roentgenographic delineation of the urogenital tract." Joseph F. McCarthy, Director, Department of Urology, New York Post-Graduate Medical School and Hospital.

January 30.—"Certain aspects of syphilitic cardiac disease." Edward P. Carter, Resident Lecturer in Medicine, Johns Hopkins University; Associate Physician Johns Hopkins Hospital, Baltimore.

February 6.—"Osteomyelitis." Dean Lewis, Professor of Surgery, Johns Hopkins University, Baltimore.

February 13.—"Tuberculosis of bones and joints—diagnosis and treatment." William S. Baer, Clinical Professor of Orthopedic Surgery, Johns Hopkins University, Baltimore.

February 20.—"Cancer as a complication of skin diseases." Joseph J. Eller, Assistant Professor of Dermatology, New York Post Graduate Medical School and Hospital.

February 27.—"More common diseases of the teeth and jaws." Theodor Blum, Oral Surgeon, Department of Dentistry, Sydenham Hospital.

"Vincent's infection." Raymonde A. Albray, D.D.S., Consulting Oral Surgeon, Hospital of St. Barnabas, Newark.

March 6.—"Practical advances in the study of the liver and its diseases." Reuben Ottenberg, Associate Physician to the Mount Sinai Hospital.

March 13.—"Silicosis; its present aspect." Henry K. Pancoast, Professor of Roentgenology, University of Pennsylvania, Medical School; Roentgenologist to Hospital of the University of Pennsylvania.

March 20.—"Arthritis." Ralph Pemberton, Physician to The Presbyterian Hospital, Philadelphia; Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania.

March 27.—"Allergy in children." Bret Ratner, Clinical Professor of Pediatrics and Lecturer in Immunology, New York University and Bellevue Hospital Medical College.

April 10.—"The early diagnosis and treatment of poliomyelitis." Josephine B. Neal, Clinical Professor of Neurology, Columbia University.

April 17.—"Problems of gastro-enterology today." Walter C. Alvarez, Associate Professor of Medicine, University of Minnesota, The Mayo Foundation.

The Alvarenga Prize of the College of Physicians of Philadelphia

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about three hundred dollars, will be made on July 14, 1931, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

An essay intended for competition may be upon any subject in medicine, but must be accompanied by a written assurance from the author that it has not appeared previously in print, either in whole or in part, in any form, and has not been presented elsewhere in competition for a prize. The essay should represent an addition to the knowledge and understanding of the subject based either upon original or literary research. It must be typewritten, and in English acceptable for publication without necessity for editing by the Committee. Any illustrations should be appropriate and correctly annotated with

Announcement

Owing to the widespread interest in Vitamin A Therapy and the rapid increase in demand for Vitamin A in concentrated form, we have recently increased our laboratory facilities for the production of

Ayerst

Capsule No. 290

Alphamin

(Vitamin A concentrate)

at substantially reduced prices

We believe that a lower cost to the patient will permit the physician to prescribe Alphamin more freely, as a medium for Vitamin A Therapy.

As Canadian manufacturers, we are endeavouring to co-operate with the desire of the Department of Trade and Commerce to see Canadian Products marketed on the most economical basis.

Ayerst, McKenna & Harrison
Limited
Pharmaceutical Chemists

MONTREAL - 781 William Street - CANADA

the text. Essays must be received by the Secretary of the College on or before May 1, 1931.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; and that it may be published by the author with the consent of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1930 has been awarded to Dr. Henry A. Harris, London, Eng., for his essay entitled: "Cod Liver Oil and the Vitamin in Relation to Bone Growth and Rickets." John H. Girvin, Secretary, 19 South 22d Street, Philadelphia, Pa., U.S.A.

According to the *Journal of the American Medical Association*, "Typhoid Mary," the carrier who infected at least twenty-eight members of seven different families in which she was employed as cook, is still alive and is quarantined in a New York hospital, where she earns a small salary by cleaning glassware. Her stools are constantly used by the New York Department of Health as a control for bacteriological media.

GENERAL

A Rural Health Experiment in China

Details of an attempt to bring health to a county with 400,000 inhabitants but not a single qualified physician, are contained in the October issue of the *Quarterly Bulletin*, just published by the Milbank Memorial Fund.

An article entitled "A rural health experiment in China" records the donation of $50,000 by the Milbank Memorial Fund to aid the health program now being undertaken in Ting Hsien. This announcement follows closely upon news from Geneva that the League of Nations has decided to support and coöperate in attempts to modernize China's health service despite that country's seeming preoccupation with civil war.

The Ting Hsien experiment is part of the Chinese National Association of the Mass Education Movement. This organization was formed in 1923 by Y. C. James Yen, a Yale graduate. "Jimmie" Yen, as he is most familiarly known, brought about large-scale mass education in China through reducing the number of written word characters in the language from 40,000 to about 1,000.

The health program was worked out on the ground, with the technical assistance of Edgar Sydenstricker, director of the Fund's research division. The report comments as follows on the program:—

"The significance of this health experiment in an interior county of China must be viewed against a background of facts that are not entirely familiar to the average American. At first glance an undertaking of such character in a period of civil war, chaotic political situation and seriously disturbed industrial conditions may seem untimely. The answer of the leaders is that now is the strategic time for a non-political organization, such as the Chinese National Association of the Mass Education Movement, to begin a genuine experiment, and thus lay the foundation for more effective governmental activities when the political situation has cleared itself.

"The Ting Hsien experiment is regarded in China as of pioneer importance in applying modern scientific knowledge to conditions that are extraordinarily peculiar —from the Western point of view—at a time when experimentation may yield results of profound importance in the future.

"No dependable nation-wide vital statistics exist, but records of sample populations indicate an annual death rate of approximately 30 per 1,000 and an average expectation of life at birth of only about 35 years."

Dr. H. Y. Yao, head of the Ting Hsien Health Department, in a letter to John A. Kingsbury, Secretary of the Milbank Memorial Fund, described conditions in his district as follows:—

"Over 90 per cent of the people are illiterates and most of them are poor, ignorant and superstitious, living in mud huts, blackened with soot and smoke, swamped with flies, mosquitoes, bed bugs, fleas and rats. Even the so-called middle classes keep their domestic animals in the quarters where they sleep, cook and eat. Their lives are haunted with frequent sickness and disease.

"The health knowledge of the people is low and the available medical facilities are nil. Modern medicine is a curiosity and public health is unheard of. In the whole county of 400,000 people there is not a single qualified modern trained physician. The old style Chinese physicians are such that they ascribe diseases to heat and wind. They know nothing of infection and will deliberately thrust a needle into a man's abdomen after moistening it with their own saliva."

The health demonstration in Ting Hsien has selected certain specific health problems for its initial attack and is now engaged in educating the natives to appear for examinations and to accept medical advice and treatment. Vital statistics are being collected and native nurses, midwives and physicians are being trained in modern scientific methods.

Ting Hsien is a typical Chinese county with one city of 80,000. The mass of its population is huddled in mud hut villages of about 1,000 each . Sanitation is unknown and conditions of living are almost unbelievably primitive.

International League Against Trachoma

At the thirteenth International Congress of Ophthalmology, held at Amsterdam last year, it was resolved to found an international anti-trachoma organization. This body has now been formed at Geneva, where the preliminary arrangements were recently concluded. The sessions, which took place in the Palace of the League of Nations, were attended by forty delegates representing twenty-one States. Professor Emil de Grósz who presided, was elected president of the organization for five years, and Mr. A. F. MacCallan, C.B.E., F.R.C.S., of London, was elected a vice-president. The secretary-general is Dr. Wibaut of Amsterdam. Other members will include representatives of the Hygiene Committee of the League of Nations, the Association Internationale contre la Cécité, and of the International Ophthalmological Council. Among the aims of the organization are: (1) to further co-operation for the prevention of trachoma, both nationally and internationally; (2) to support and propagate all measures directed against the disease; (3) to organize conferences with the object of elucidating the problems of its etiology, diagnosis, treatment, extension, and prevention, of discussing associated scientific and social questions, and of preparing necessary legislation. Reference was made to a special law that had been passed in Hungary as early as 1886 initiating a campaign against trachoma, and the opinion was expressed that such precautionary measures should be advocated in all countries exposed to risk. Japan was reported to have

FOR SALE.—Small hospital, town of 800, State of Washington near Canadian border. Cost $14,000. Fine opening for Surgeon; office, home, hospital in one building; large territory. No other surgeon. Price, $7,500, terms. No. 344S Aznoe's National Physicians' Exchange, 30 North Michigan, Chicago.

WANTED—General Practitioner for rural district, Alberta. General practise, fees limited, salary $2,000.00. For particulars apply, stating qualifications, to P. R. Hooper, Sec.-Treas., Dunstable, Alberta.

WANTED—Physician to take charge of x-ray and physical therapy department in well established hospital in Eastern Canada—115 beds. Apply Box 139, C.M.A.J., 3640 University St., Montreal.

FOR SALE—The full office equipment of the late Dr. H. M. Cunningham, Eye, Ear, Nose and Throat Specialist, is for sale. Kindly address enquiries to Mrs. H. M. Cunningham, 4549-2nd., W, Vancouver, B.C.

VACANCY for woman interne in General Hospital. 100 beds including Surgical, Medical, Pædiatric and Obstetrical service. Venereal and Mental Clinics. Salary and maintenance. Apply Box 111, C.M.A.J., 3640 University St., Montreal.

WANTED—Graduate nurse, who is also an experienced stenographer and bookkeeper desires secretarial position in hospital or doctor's office. Address E. A. Mount, R.N., 83 Christie Street, Toronto 4, Ont.

London School of Hygiene and Tropical Medicine

(University of London)

Tropical Medicine and Hygiene

The School provides Two Courses yearly, each of 22 weeks. The Spring Course commences on 2nd February, 1931, and the Autumn Course in October, 1931. Composition fee to include hire of Microscope, etc., £34. 5. 0.

Diploma in Public Health

The next Course of Study, covering a period of 12 months, commences on October 1st, 1931, and is so designed that students wishing to do so can proceed to the New Academic Diploma instituted by the University of London.

The composition fee of 54 guineas covers the cost of the necessary practical work and instruction in Infectious Diseases, etc.

Diploma in Bacteriology

The Course of Study, covering one academic year, commences in October. Composition fee, £47. 15. 0.

Epidemiology and Vital Statistics

Special three-monthly Advanced Courses. Composition fee, £7. 7. 0.

Applications for Prospectuses and for other information should be addressed to THE SECRETARY, Keppel Street, (Gower Street), London, W.C.1.

FERRO-CATALYTIC

℞

*Blaud	=30 gr.
Copper (as Carbonate)	1/48 gr.
Phenolphthalein . .	1/12 gr.

*Approximately three grains of iron in the *Ferrous* state.

DOSE:—One capsule three times daily, after meals.

FERRO-CATALYTIC

for low colour index Anaemia

"Cases of this disease of long duration were treated with a combination of iron and copper in capsules given by mouth. Prompt improvement followed in all cases, with restoration of the blood to about its normal level." *Mills, C.M.A.J., Feb., 1930*

This formula, originated in the "Frosst" Laboratories, was presented to Canadian Physicians after an experimental study had conclusively proved its effectiveness.

Many gratifying reports have since been received, from Canadian physicians, indicating more than usually satisfactory results from the administration of this preparation.

Syrup: For use in cases where administration by capsules is unsatisfactory (as with children) **Syrup Ferro-Catalytic** is at the physician's disposal.

Charles E. Frosst & Co.
MONTREAL

Mail the coupon for Original Physician's Package and further literature.

Charles E. Frosst & Co
P.O. Box 808, Montreal.

Dear Sirs:—Please send me further literature and Original Physician's Package of **FERRO-CATALYTIC.**
Yours truly.

_____

_____

XUM

established a thousand centres for the treatment of half a million patients suffering from the disease. About a thousand specially trained doctors were stated to be engaged in this service, which had been estimated to cost the country half a million yen every year. At one of the sittings an address was delivered by Dr. Olitsky of New York on the significance of the bacillus discovered by Noguchi, and a demonstration was given by Mr. M. S. Mayou, F.R.C.S., of London. The League of Nations has issued a circular letter requesting its members to support the work of the organization. Professor Gourfein entertained the delegates to a luncheon at his Geneva clinic, and a dinner was arranged by M. André Patry, a Geneva oculist.—*Brit. M. J.* **2**: 328, 1930.

It is proposed that the next meeting of this League should be held in June, 1931, at Budapest. At the recent meeting of the League at Geneva, when Prof. de Grosz was elected President, the following were chosen as vice-presidents and members of the executive committee: Dr. Marquez (who was chairman of the International Ophthalmological Congress in Madrid), Mr. Szymansky (President of the Polish Upper House), Mr. MacCallan (representing the Ophthalmological Society of the United Kingdom), Mr. Morax (Paris), Mr. Angelucci (Naples), Dr. Birch-Hirschfeld (Königsberg). Other members of the executive committee are Mr. Brandes (Antwerp), Mr. Kadlicky (Prague), Mr. van der Hoeve (Leiden), Mr. de Lapersonne (Paris), Dr. Park Lewis (Buffalo, U.S.A.), and Mr. Miyashita (Tokyo).

A Faculty of Medicine for Marseilles

The premier seaport town of Marseilles, which is already the seat of a medical school, is to become endowed with a regularly constituted medical faculty. This result has only been attained by slow degrees, for the establishment of the faculty was for long held in suspense. The site and various parts of this new institution is to be the Pharo Palace, which was constructed on behalf of the late Empress Eugènie. The chateau is attractively situated, overlooking the sea.

Book Reviews

Laboratory Medicine. A Guide for Students and Practitioners. Daniel Nicholson, Assistant Professor of Pathology, University of Manitoba; Assistant in Pathology, Winnipeg General Hospital. Octavo, 437 pages with 108 engravings and a coloured plate. Cloth, $6.00 net. Published by Lea and Febiger, Philadelphia, 1930.

The aim of this book is to provide detailed information on the indications, method and interpretation of clinical and laboratory tests which a medical practitioner should be able to perform. The volume also includes the principles and interpretation of the more highly technical diagnostic procedures which may be performed in a large laboratory.

The first pages are devoted to an enumeration of the tests likely to shed light on any given pathological condition such as anæmia, sepsis, abnormal hæmorrhage, etc. A great deal of time and care have been expended in making this part of the book thorough, yet brief. In the initial chapters the author describes the various tests by which the diseases of the blood-forming organs may be recognized, and comments upon the relative value of each in diagnosis. Not the least most interesting portion of these chapters is a résumé of recent views on the origin and maturation of the various blood elements. Other subjects included are blood-grouping, the Wassermann reaction, the technique and interpretation of the Widal reaction, and methods for determining the alkali reserve. The fourth chapter is a brief exposition of methods for determining the bacteriology of exudates. It is followed by others on the interpretation of the microscopic findings in pleural, ascitic and other body fluids. These chapters are generously illustrated by excellent drawings and photomicrographs. A separate chapter is devoted to cerebro-spinal fluid examination. The varied changes in this fluid in disease, as tabulated by Freemont-Smith and Ayer, are included. Subsequent chapters deal with the methods of examination of the gastric and duodenal contents, the urine and fæces. Other subjects briefly treated are the various reactions of immunity, such as the Schick test, the cutaneous reactions to protein, basal metabolism, and the methods of detecting poisons in the various body fluids.

The book is far more than a mere glossary of clinical and laboratory tests; it is a critical review and an interpretation of such tests by one who is equally at home in the laboratory and at the bed-side. Such a book goes far towards bridging the gap which all too often exists between the wards and the laboratory. It will be welcomed not only by student and general practitioner for whom it was designed but by internist and laboratory worker. In fact it is recommended to anyone who aims to practise the science as well as the art of medicine.

Clinical Nutrition and Feeding in Infancy and Childhood. I. Newton Kugelmass, M.D., Ph.D., Sc.D., Associate Attending Pediatrician, Fifth Avenue Hospital, etc. 345 pages, 37 illustrations. Price $6.00. Philadelphia & London, J. B. Lippincott Company, 1930.

In this small book the author has condensed a great deal of valuable information. The chapters on the food requirements of the normal infant are particularly well done and represent the more modern ideas of the American pædiatrist. The chapters relating to diet during illness are a valuable aid to both the pædiatrician and the general practitioner, those dealing with nephritis, diabetes and disturbances of acid-base metabolism being particularly instructive. The book is complete with valuable reference tables showing percentage composition of foods, caloric values, etc. If there is a criticism, it is that in some chapters the subject matter has been so condensed that it is difficult to read. The volume, however, can be thoroughly recommended for the use of the pædiatrist or general practitioner, and is obviously the work of a well trained bio-chemist, who has had, in addition, a large experience in feeding infants and children.

Nervous Indigestion. Walter C. Alvarez, M.D., Associate Professor of Medicine, University of Minnesota (the Mayo Foundation) 297 pages. Price $3.75. Paul B. Hoeber, Inc., New York, 1930.

With medical literature tending more and more to become scientific in character it is refreshing to read a book which deals with the art of medicine, especially when it is written by one who has had extensive clinical and scientific experience. In the opening chapters the author details the clinical and experimental evidence of the effects of emotions on the digestive tract, the purging effect of fear and anxiety, and the importance of the psychic secretion, with its inhibition by worry and fatigue. There follows a discussion of the various types of indigestion. The importance of excluding organic disease is emphasized, many cases being cited where patients have been treated as neurasthenics and eventually

Liver and Liver Extracts in the treatment of

PERNICIOUS ANAEMIA

The specificity of the Minot-Murphy liver diet has been conclusively demonstrated in the therapy of pernicious anaemia.

In many cases, however, it proves impracticable to keep patients on a diet rich in liver; but in these cases the oral administration of specially prepared liver extracts will achieve the desired results.

Liver Extract prepared according to a method devised by Cohn and his associates at the Harvard Medical School is available from the Connaught Laboratories as a powder in packages, each of which contains the extract derived from approximately five pounds of liver.

Information relating to the use of Liver Extract in the Treatment of Pernicious Anaemia will gladly be sent to any Physician or Hospital upon request.

CONNAUGHT LABORATORIES

University of Toronto

Toronto 5 :: Canada

definite organic disease found to be the actual cause of the symptoms. The chapter on case history taking is an excellent one and should be read and acted upon by all who would avoid errors in diagnosis.

For the treatment of nervous indigestion the author advises great care in the prescribing of diets and drugs. He is opposed to the use of roughage diets, hydro-carbon oils and laxatives which are so often so thoughtlessly given these patients. Complete rest, sleep, psychotherapy, a smooth diet, and a liberal use of sedatives of the barbituric acid group comprise in the author's experience the most beneficial treatment.

The book is written in a most interesting manner and the many cases cited from the author's clinical experience are both helpful and entertaining.

Text-book on Orthopedic Surgery. Willis C. Campbell, M.D., F.A.C.S., Professor of Orthopedic Surgery, University of Tennessee, etc. 705 pages, illustrated. Price $9.50. London & Philadelphia: W. B. Saunders Co. Canadian Agents: McAinsh & Co. Ltd., Toronto, 1930.

According to the preface the purpose of this book is to present to the student, the general practitioner and the surgeon the subject of orthopædic surgery in a simple and comprehensive manner. If it had succeeded in doing this it would indeed be an extraordinary book. Unfortunately it is not possible to write a book that will serve undergraduate student, general practitioner and surgeon well. Many authors attempt it but they fail invariably because the requirements of the three groups are so entirely different from one another. In this instance the author has produced a book which may be useful to the general practitioner but is not to the student or the surgeon. The ideal students' text-book is one which teaches principles rather than details and which attempts to influence the student to base diagnosis and treatment on a knowledge of pathology. It is in the matter of surgical pathology that the book is found wanting and the defect is so pronounced that students should be advised to look elsewhere for their instruction. To the surgeon, also, the book is inadequate. In attempting to serve student and practitioner the author has cut down on the detail of technique which the surgeon particularly requires, so that it will seldom be used by those who actually practise orthopædic surgery.

While these remarks apply to the book as a whole there are certain chapters which are excellent and which contain material of the utmost importance to the surgeon. Of these the chapter on arthroplasty is an example and that dealing with ununited fractures is another. These chapters indicate that the author has been particularly interested in these subjects and has made important original contributions to them.

Orthopædic Surgery. Royal Whitman, M.D., M.R.C.S. (Eng.), F.A.C.S., Consultant to the Hospital for the Ruptured and Crippled, etc. Ninth edition, revised, 1085 pages with 981 engravings. Price $10.00. Lea & Febiger, Philadelphia, 1930.

It is always a pleasure to welcome successive editions of Whitman's Orthopædic Surgery, which has now been a standard text-book for twenty-nine years. The common basis of all the many lesions described is mechanical disability. Whether in upper or lower extremity or spine, and whether due to congenital, traumatic or arthritic causes, all subjects are treated in an intensely interesting and practical way, to be read with benefit by student and family physician as well as by the trained orthopædic surgeon.

Some of the most interesting articles deal with the various operative procedures for the relief of paralytic deformities of the foot. A chapter on collateral orthopædic surgery deals with fractures, amputations and nerve injuries, as also with the diminution of wage-earning capacity, the result of various lesions. One may express surprise that a method of treatment of scoliosis admittedly discarded at the Hospital for the Ruptured and Crippled still occupies some fourteen pages of description. On the other hand the reviewer was unable to find any mention of the turnbuckle jacket method of forcible correction of spinal curvature. As regards sciatica, no allusion could be found to several important studies made during the past few years concerning its etiology and treatment.

The author's original operation for paralytic calcaneo-valgus, his reconstruction hip operation and abduction treatment for fracture of the neck of the femur, together with his loop operation at the ankle are all given their due prominence.

It is to be hoped that still further editions of this important book may be put forth by Dr. Whitman.

Oxidation-Reduction Potentials. L. Michaelis, M.D., translated from the German Manuscript by L. B. Flexner. 199 pages, illustrated. Price $3.00. J. B. Lippincott Co., Philadelphia, London and Montreal.

Just as the classic studies of Sorensen, Mansfield Clark, and others translated into the measurable terms of hydrogen-ion potential the older, vaguer concepts of "strong" and "weak" acids, so the studies detailed in this book promise us a clarifying translation into similar units of electromotive force of our hitherto merely qualitative ideas of oxidizing and reducing agents. If, for example, a gold or platinum electrode be immersed in a solution containing hydroquinone and its oxidation product, quinone, a potential arises; if the relative concentrations of quinone and hydroquinone are kept constant, this potential is a measure of the hydrogen-ion concentration of the solution (quinhydrone electrode); if the pH be kept constant, the potential gives information as to the relative amounts of, and the relations between, the oxidant quinone and its reductant hydroquinone. The method can be applied to any other reversible oxidation-reduction system. Unfortunately, of the systems that come first to the mind of the physiologist, glutathione is not strictly reversible; oxyhæmoglobin is not, in this narrow sense, an oxidation product of hæmoglobin, but rather an addition-compound with oxygen; and cytochrome has not yet been isolated for study. One can only hope that further research in this field may discover means of extending this technique to problems of metabolic significance. Yet its ten pages of bibliography are sufficient evidence that this first monograph of the subject is not premature. Michaelis himself stands beside Clark and Conant as a pioneer explorer of this territory; and the first half of the book, which deals with physico-chemical considerations, is a thoroughly sound and logical exposition, clear to any resolute reader who has mastered the elements of physical chemistry. The second half of the book is concerned with physiological applications, and reads, one must admit, as a series of confessions of failure: a provocative stimulus, nevertheless, to those seeking problems for investigation. There are occasional minor errors. Thus the names "Cyril, B., & J. G. Knight" in reality all belong to one individual; but on the whole the book appears to be accurate and reliable, and deserves to be widely read.

Recent Advances in Diseases of Children. Wilfrid J. Pearson, D.S.O., M.C., D.M., F.R.C.P., and W. G. Wyllie, M.D., M.R.C.P. Second Edition. 548 pages, with 20 plates and 34 text-figures. Price 15/-. J. & A. Churchill, London, 1930.

This work is, like the previous edition, in no sense a review of the recent literature, but rather a text-book on clinical pædiatrics, with emphasis laid throughout on

British Medical Products

now available from

Local Stock in Canada

In order to meet the requirements of the rapidly-increasing number of physicians who appreciate the value of the British medical products bearing the brand 'B.D.H.', we have opened a branch in Canada where representative stocks of all the more important B.D.H. preparations will be maintained.

The products now available to physicians in the Dominion are

ACRIFLAVINE—
Powder Tablets Solution
BOROCAINE—Tablets
CONTRAMINE—
Solution in Ampoules Pessaries
EPHEDRINE—
Ampoules Elixir Tablets
LIVER EXTRACT—
MANGANESE BUTYRATE—Ampoules
MEDICINAL GLUCOSE—Powder.
RADIO-MALT—In jars of two sizes
RADIOSTOL—Solution Pellets
RADIOSTOLEUM—Liquid Capsules

S.U.M. 36—Ampoules
S.U.P. 36—Ampoules
S.U.P. 468—Ampoules
THIO-HISTAMINE—Ampoules

Literature and samples of any of these can be obtained on request from our Canadian branch:

The British Drug Houses Ltd.
Terminal Warehouse
(Foot of York Street) Toronto 2, Ont.

Drugs Limited,
Lydia and McDermott Sts.,
Winnipeg

B. C. Drugs Limited
Vancouver

THE BRITISH DRUG HOUSES LIMITED, LONDON, ENGLAND

Don't Put It Off!

WHEN fire breaks out it is too late to avert the loss of valuable papers locked up in a drawer in your office or home.

The cost of protection is far less than the expense of replacing one document—provided it can be replaced.

Don't put off renting a Safety Deposit Box until it is too late. For two cents a day you can buy protection.

Wills Bonds Stocks
Deeds Policies
Family Records

The Royal Bank of Canada

3023

the authors' conception of the general principles underlying morbid processes in children. An introductory chapter expounds a philosophy of disease. Vitamin deficiency, sun starvation, impure air and faulty breathing, and improper diet constitutes an unsuitable environment to which the body strives to adapt itself. In the struggle, metabolic disturbances are set up, the brunt of the disorganizing effects being borne by the tissue cells and capillaries, the vasomotor nervous system and the ductless glands. The final stage is reached when the disordered metabolic state is aggravated by the toxins of bacteria. Great importance is attached to constitution as influencing the manifestation of disease, notably in the lymphatic and in the neuro-arthritic or acid type of child.

Although assigning the major rôle in the initiation of disease to vitamin deficiency, the authors place insufficient emphasis on the routine offering of vitamins in early infancy. Their recommendation of the longitudinal sinus as the "route of election for intravenous therapy" will not meet general approval.

The subject matter is well arranged and well indexed, and the book will prove of great value to the practitioner.

Selected Readings in the History of Physiology. Edited by John Farquhar Fulton, M.D., Formerly Fellow of Magdalen College, Oxford. Sterling Professor of Physiology, Yale University. 309 pages and 61 illustrations. Price $5.00. Charles C. Thomas, Springfield, Illinois, 1930.

Here is a worthy and attractive companion to Professor Esmond Long's "Selected Readings in Pathology." It consists of ninety extracts, each three or four pages in length, from the writings of great physiologists past and present. It is hard to see how the selection could be improved upon; each passage quoted is either a description of some epoch-making experiment, or the statement of some important truth in the words of the discoverer. The book is divided into seven chapters, dealing with the capillaries, respiration, digestion, etc. In each chapter the selected passages are arranged chronologically. To each section is prefixed a succinct biographical note; and there are many illustrations, portraits of the masters, and facsimiles of the drawings or title-pages of their works. Only three of the extracts lead us back further than the sixteenth century; the others may be roughly divided into two groups. In the first we have the "old masters"—quaint, delightful, often astonishingly far-sighted; Robert Boyle discovering that the "spring" of the air is inversely proportional to the volume; Réaumur forcing his pet buzzard (or kite—the editor apparently regards these terms as synonyms) to swallow sponges, so that he might squeeze gastric juice out of them when they were presently ejected; Jean Rey and his triumphant chapter heading, *By a single experiment all opinions contrary to mine are entirely destroyed!* In the second group more modern papers are transcribed—papers which are quoted as "Reference No. 1." in many articles every year: the discoveries of insulin and of glutathione, Kato on "decrementless conduction," Magnus on "posture," and the like. Familiar as these are to most of us, the young student usually takes them on trust from text-books, since in these days it is well-nigh impossible to keep up with the literature year by year, and these fundamental works are more often cited than read. This division into two groups is particularly obvious in the chapter on respiration, which leaps from Lavoisier to Haldane and Priestley, passing a century and a quarter over in silence. In a vigorous preface addressed to the student, the editor draws attention to the number of important discoveries made by comparatively young men, and to the number which have been made upon the human subject rather than on experimental animals; and pays tribute to Osler's contributions to the history of medicine. Apart from one or two trifling misprints, such as a curious "scale" for "real" (page 301), the compilation appears to have been most carefully done. The printing, paper and binding are worthy of the contents, and every factor unites to make an unusually pleasing book, which should stimulate many readers to further search into the sources of physiology.

Problems of Neurosis. Alfred Adler, Preface by F. G. Crookshank, M.D., F.R.C.P., edited by Philippe Mairet. 244 pages. Price $3.00. Cosmopolitan Book Corpn., New York. The Copp Clark Co. Ltd., Toronto, 1930.

The name of Adler is well known in psychological and psychiatric circles as the leader of a school of thought with which is associated the term "individual psychology", and that is regarded as distinct from the psychoanalysis of Freud and the so-called "analytical psychology" of Jung.

The writings of Adler have attracted much attention in fields other than medical, and are well known to that large body of laymen who eagerly study all new movements that seem to offer further knowledge of the mind and the problems that confront it. This book is said to be edited by Philippe Mairet, and has a prefatory essay by Dr. F. G. Crookshank that extends to thirty-eight pages and is not the least interesting part of the book. The book is obviously not intended primarily for medical consumption. Without doubt Adler is a man of great resource in handling certain types of patients, but it would seem that the problems in the book are settled and solved in a way that is more easy and satisfying than seems possible for most physicians confronted with such problems in the flesh. A readable book that should have a good sale to a wide public.

BOOKS RECEIVED

Doctor and Patient. Frances Weld Peabody, M.D., Professor of Medicine, Harvard Medical School, etc. 95 pages. Price, $1.75. New York: The Macmillan Co.; Toronto: The Macmillan Co. of Canada, 1930.

Surgical Clinics of North America. By leading surgeons. Vol. 10; issued serially every other month. 300 pages, illustrated. Price $18.00 (six numbers). London & Philadelphia: W. B. Saunders Co.; Toronto: McAinsh & Co., 1930.

International Clinics. By various authors. Edited by Henry W. Cattell, A.M., M.D., and others. Vol. 3. 306 pages, illustrated. Philadelphia & London: J. B. Lippincott Co., 1930.

SAL HEPATICA

A Carefully Blended and Well-Balanced Effervescent Saline Combination.

Materially aids in the correction of alimentary toxemias by thoroughly cleaning the intestinal canal.

Laxative or active cathartic according to dosage.

Samples for clinical trial

BRISTOL-MYERS COMPANY
75 West Street,
New York